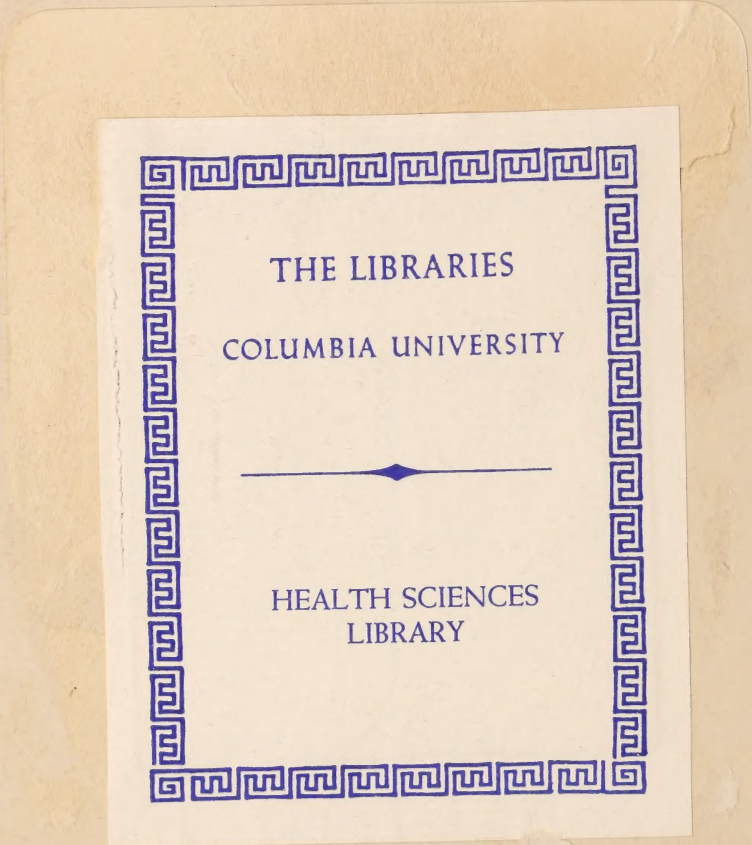


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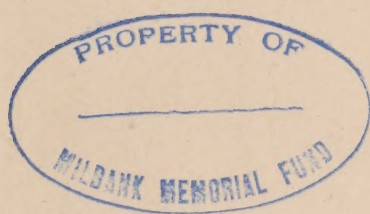
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INDEX
VOLUME XI
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JANUARY	pp.	1-101	JULY	pp.	593-696
FEBRUARY	pp.	105-189	AUGUST	pp.	697-784
MARCH	pp.	193-293	SEPTEMBER	pp.	785-872
APRIL	pp.	297-398	OCTOBER	pp.	873-956
MAY	pp.	401-487	NOVEMBER	pp.	957-1029
JUNE	pp.	489-592	DECEMBER	pp.	1031-1120

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INDEX

	PAGE
Abele, C. A. and Hazlehurst, George H. Applied Sanitation in Alabama.....	741
Abstract of Report of Committee on the Accuracy of Certified Causes of Death..	966
Accurate Method for Determining the Alkalinity in Hypochlorite Solutions, An. J. A. Wesener, M. D., and G. L. Teller, M. S.	613
Adolescents, The Need for Special Health Protection for Employed. Harold H. Mitchell, M. D., C. P. H.....	973
Alabama, Applied Sanitation in. George H. Hazlehurst and C. A. Abele.....	741
Alkalinity in Hypochlorite Solution, An Accurate Method for Determining the. J. A. Wesener, M. D., and G. L. Teller, M. S.	613
Allen, Kenneth, Chairman. Report of Committee on Sewerage and Sewage Disposal	548
American Expeditionary Force, Bacteriological Methods of Water Analysis Used in the. Edward Bartow and Robert Edman Greenfield.....	65
A. P. H. A., Past, Present and Future, The. Mazyck P. Ravenel, M. D.....	1031
American Public Health Association:	
Committees, Reports. See Report.	
Executive Committee Meeting.....	165
Headquarters Remove to New York City.....	460, 463
Jubilee Volume	653
Program Regulations	164
Stephen Smith Medallion	1013
American Red Cross Health Center, The.....	227
Anaërobic Spore Test, Detection of Manural Pollution in Milk by the. John Weinzirl, Dr. P. H.....	149
Animal Experimentation, Value of, to Mankind. George Hoyt Whipple, M. D..	105
Animal Foods, Maintaining Standards of. M. E. Jaffa.....	23
Anociation. Editorial	925
Antistreptococcus Serum, Testing of. Ella M. A. Enlows.....	733
Anti-Tuberculosis Campaign, The Family Doctor and the General Hospital in the. F. C. Smith, M. D.	534
Appleton, V. B., M. D. Observations on Deficiency Diseases in Laborador....	617
Applied Sanitation in Alabama. George H. Hazlehurst and C. A. Abele.....	741
Arkin, Aaron, A. M., M. D., Ph. D. The Unsolved Problems of Preventive Medicine	894
Armstrong, Donald B., M. D. National Health Council Launches Rotary Health Week.	1006
Army and Navy Venereal Disease Records, Industrial Application of. Ray H. Everett and Mary Augusta Clark.....	829
Baby Health Centers. Lydia Allen DeVilbiss, M. D.	231
Bacillus Coli, Influence of Peptone on Indol Formation by. F. W. Tilley, M. D.	834
Bactericidal Action of Water Treated by Ultra Violet Rays. W. F. Walker and R. W. Pryer, D. P. H.	703
Bacteriological Methods of Water Analysis Used in the American Expeditionary Force. Edward Bartow and Robert Edman Greenfield.....	65
Bacteriology, The Relations of, to the Public Health Movement since 1872. Edwin O. Jordan, Ph. D.	1042
Bact. Coli and Bact. Aërogenes, Notes on. Max Levine.....	21
Bacterium Coli, Lactose Broth for Isolating from Water. Esther A. Wagner and W. F. Monfort	203
Bacterium Tularensis, Review of Our Knowledge of. C. W. Chapin, M. D.....	529

INDEX

V

PAGE

County Health Work, Virginia Plan of Coöperative. W. F. Draper, M. D.....	801
Crane, Jacob L., Jr. Sanitation in Venezuela and Colombia.....	145
Craster, C. V., M. D. Conquest of Mosquito-Borne Diseases.....	538
Crooks, Minna and Young, C. C. Comparative Studies of Diphtheria Cultures of Loeffler's Medium with the Original Swabs Transported by Mail.....	241
Cruess, W. V. Evaporation of Fruits and Vegetables.....	6
Cuba, Public Health in. Jorge LeRoy, M. D.	1048
Cumming, James G., M. D., Dr. P. H. Measles and Its Allies.....	785
Curtis, Francis George, M. D. The Development of the Board of Health and Its Relation to the Public	1058
Davin, John P., M. D. Discussion on Report of Joint Committee on Narcotic Drugs	1072
Decline of Tuberculosis in New York City.....	746
Deficiency Diseases in Labrador, Observations on. V. B. Appleton, M. D....	617
Democracy, Scientific, in America. Editorial.....	1088
Dental Prophylaxis, A Study in. Thaddeus P. Hyatt, D. D. S.	739
Dentistry, Rôle of in Personal Hygiene. Guy S. Millberry, D. D. S.....	53
Department of Hygiene and Public Health at the University of Kentucky. P. K. Holmes, A. M., M. D.	338
Detection of Manural Pollution in Milk by the Anaërobic Spore Test. John Weinzirl, Dr. P. H.	149
Detroit, Infant Mortality in. George T. Palmer, D. P. H., and G. Arthur Blakeslee	502
Development of the Board of Health and Its Relation to the Public, The. Francis George Curtis, M. D.	1058
Development of County Health Work. Editorial	646
DeVilbiss, Lydia Allen, M. D. Baby Health Centers.....	231
Dickie, Walter M., M. D. Program of the Bureau of Social Hygiene of the California State Board of Health.....	306
Dickinson, May Bliss, R. N. Mothercraft Insurance for School Girls.....	199
Diner, Jacob, M. D. Discussion on Report of Joint Committee on Narcotic Drugs	1071
Dinwiddie, Courtenay. The National Child Health Council.....	995
Diphtheria Cultures of Loeffler's Medium, Comparative Studies of, with the Original Swabs Transported by Mail. C. C. Young and Minna Crooks.....	241
Disease, Theories Concerning the Causation of. L. W. Feezer.....	908
Disinfection, Hand—An Investigation of Various Preparations for This Purpose. John R. Conover, M. D., and John L. Laird, M. D.....	816
Donaldson, Wellington. Industrial Wastes in Relation to Water Supplies	193
Draper, W. F., M. D. Virginia Plan of Coöperative County Health Work.....	801
Drug Habit, Relations of Society to the. Peter H. Bryce, M. A., M. D.....	812
Drugs and Nostrums, Report of Committee on.....	1073
Drummond, J. C., D. Sc., F. I. C. Vitamins and Certain Aspects of Their Rela- tion to Public Health	593
Duffield, Thomas J. Infant Mortality Rates for Paris.....	905
Education in Health at Cornell University, 1919-1920. Haven Emerson, M. D., Lawrence B. Chenoweth, M. D., Frank C. Balderry, M. D. and Claude E. Case, M. D.	309
Effluents from Small Imhoff Tanks Clogdosing Devices. C. P. Rhynus.....	569
Emerson, Haven, M. D., Chairman. Abstract of Report of Committee on the Accuracy of Certified Causes of Death.....	966
Emerson, Haven, M. D. Discussion on Report of Joint Committee on Narcotic Drugs	1067
Emerson, Haven, M. D., Chenoweth, Lawrence B., M. D., Balderry, Frank C., M. D. and Case, Claude E., M. D. Education in Health at Cornell Uni- versity, 1919-1920.....	309

	PAGE
Endemic Focus of Leprosy, Epidemiological Study of an. Mark F. Boyd, M. D., and Warren F. Fox, M. D.....	628
Enlows, Ella M. A. Testing of Antistreptococcus Serum.....	733
Epidemiological Rôle of the Case of Cerebro-Spinal Meningitis. R. R. Simons, M. D.	452
Epidemiological Study of an Endemic Focus of Leprosy. Mark F. Boyd, M. D. and Warren F. Fox, M. D.	628
Epidemiological Study of Smallpox in California. John M. Force, M. D., Gr. P. H.	119
Evaporation of Fruits and Vegetables. W. V. Cruess.....	6
Everett, Ray H., and Clark, Mary Augusta. Industrial Application of Army and Navy Venereal Disease Records.....	829
Factors That Influence Infant Mortality. Stewart G. Thompson, D. P. H....	415
Family Doctor and the General Hospital in the Anti-Tuberculosis Campaign, The. F. C. Smith, M. D.	534
Feezer, L. W. Theories Concerning the Causation of Disease.....	908
Finding Tuberculosis Through Survey and Clinics. M. J. Fine, M. D.....	622
Fine, M. J., M. D. Finding Tuberculosis Through Survey and Clinics.....	622
Fleischner, E. C., M. D., and Sedgwick, J. P., M. D. Breast Feeding in the Reduction of Infant Mortality.....	153
Foochow, Cholera Prevention Campaign in.....	508
Food Handling in Restaurants, Bakeries, Grocery Stores, etc. A Preliminary Report on the Results of the Recently Passed Ordinance Requiring a Physical Examination of All Persons Connected with. L. B. Gloyne, B. S., M. D.	963
Food and Health. Editorial	159
Food Inspection in Cleveland. Roger G. Perkins, M. D.....	434
Food, Relation of, to Disease. Report of the Committee on.....	757
Food, Report of Committee on Preparation, Packing and Transportation of....	265
Foods, Report of Committee on Retail Distribution and Marketing of.....	375
Foods, Sanitary Control in the Manufacture of, and Its Economic Importance. George Grindrod.....	920
Force, John N., M. D., Gr. P. H. Epidemiological Study of Smallpox in California.	119
Ford, C. E., M. D. Health Education in Industry.....	489
Fox, Carrol, M. D. Chairman. Report of Committee on Model Health Legislation	259
Fox, Warren F., M. D., and Boyd, Mark F., M. D. Epidemiological Study of an Endemic Focus of Leprosy	628
Frankel, Lee K., Ph. D. Smallpox Incidence and Measures of Control in American and Canadian Cities, 1919 and 1920.....	979
Fruits and Vegetables, Evaporation of. W. V. Cruess.....	6
Functions and Relationships of Bureaus of Child Hygiene and Bureaus of Public Health Nursing in State Boards of Health. Jessie L. Marriner.....	707
Gage, Stephen DeM. and Griffin, Altmore E. Sanitation of Bath Houses at Public Bathing Beaches	1080
General Smallpox Situation, The. Editorial	751
Gerhard, William Paul, Dr. Eng. Privies and Sewage Disposal for Farms....	564
Gloyne, L. B., B. S., M. D. A Preliminary Report on the Results of a Recently Passed Ordinance Requiring a Physical Examination of All Persons Connected with Food Handling in Restaurants, Bakeries, Grocery Stores, etc...	963
Goitre, The Prevention of Endemic. Editorial	1010
Goldman, Edward A. What Health Officers Can Do to Promote Rat Extermination	606
Good Work of Irene Kaufman Settlement.....	748

	PAGE
Gorgas, William Crawford. In Memoriam: Robert E. Noble.....	250
Graham-Mulhall, Sara. The Helpless Narcotic: A Public Menace and a Public Health Responsibility	25
Greenfield, Robert Edman and Bartow, Edward. Bacteriological Methods of Water Analysis Used in the American Expeditionary Force.....	65
Griffin, Attmore E. and Gage, Stephen DeM. Sanitation of Bath Houses at Public Bathing Beaches	1080
Grindrod, George. Sanitary Control in the Manufacture of Foods and Its Economic Importance	920
Grubbs, S. B. Maritime Quarantine a Constructive Health Agency.....	725
Hand Disinfection—An Investigation of Various Preparations for This Purpose. John R. Conover, M. D., and John L. Laird, M. D.....	816
Hanson, Henry, M. D. Sanitary Conditions in Peru.....	13
Harvard's New School of Public Health. Editorial.....	924
Hastings, Charles J., M. D., F. R. C. P. I. The Value of the Public Health Nurse in Public Health and Welfare Administration.....	712
Hastings, Charles J., M. D., F. R. C. P. I., Chairman. Report of the Committee on Smallpox	654
Hatton, T. Chalkley. The Use of Centrifuges for Dewatering Sludge.....	957
Have Your Water Supply Inspected as Well as Analyzed. Editorial.....	459
Hazlehurst, George H. and Abele, C. A. Applied Sanitation in Alabama.....	741
Health Center, The. Editorial.....	246
Health Center, The American Red Cross.....	227
Health Center, Is the Health Center a? Need of a Positive Health Ideal in the Health Center. Philip S. Platt, M. A., C. P. H.....	221
Health Center, Present Status of the. Walter H. Brown, M. D.....	218
Health Center, Symposium on the.....	212
Health Centers, Baby. Lydia Allen DeVilbiss, M. D.	231
Health Centers as Seen by a Public Health Nurse. Elizabeth Ross, R. N.....	915
Health Centers, What New York State Has Done in. B. R. Rickards.....	214
Health Code, Model	259
Health Code for Cities, Model. Editorial.....	545
Health of the College, The. Editorial. E. C. Howe.....	358
Health Education of Children. Editorial	841
Health Education in Industry. C. E. Ford, M. D.	489
Health Employment Bureau.....76, 163, 269, 380, 464, 572, 661, 760, 849, 1014,	1095
Health, Food and. Editorial	159
Health Institute, The	837, 928
Health Legislation, Model, Report of Committee on.....	259
Health Officer Legislation, Report of Committee on Full-Time.....	902
Health Officers Can Do to Promote Rat Extermination, What. Edward A Goldman	606
Health Officials, Common Sense Versus Custom in the Appointment of. Herbert B. Larner, S. B.	143
Health Pageant, Boys	827
Health Protection of Employed Adolescents, The Need for Special. Harold H. Mitchell, M. D., C. P. H.	973
Health Supervision in Colleges, Symposium on.....	309
Health Teaching and the School Health Program. C. E. Turner, M. A., C. P. H	717
Health Week, National Health Council Launches Rotary. Donald B. Armstrong, M. D.	1006
Health and Welfare Departments, Municipal Administration of. G. Hardy Clark, M. D.	401
Health and the Window Bakery. Editorial.....	840
Health Work, Let Us Stop Guessing in. Editorial.....	247

	PAGE
Heiser, Victor G., M. D. Results of Vaccination in the Philippines.....	142
Helpless Narcotic, The: A Public Menace and a Public Health Responsibility. Sara Graham-Mulhall	25
Hemenway, Henry Bixby, A. M., M. D. Birth and Death Certificates as Legal Evidence	1
Hemolytic System, Comparison of Two Methods of Adjusting the, for Use in the Complement Fixation Test for Syphilis. H. V. Langworthy and F. L. Willson	532
Henry, Jonathan E., M. D., C. P. H. A Brief Statistical Study of Recent Experience with Measles and Whooping Cough in Massachusetts.....	302
Hetherington, Clark W. Special Objectives of Physical Education with Rela- tionships to Public Health	520
Hill, G. Everett. Single Story Septic Tank.....	568
Historical Development, The (of the Health Center). James A. Tobey.....	212
Holmes, P. K., A. M., M. D. Department of Hygiene and Public Health at the University of Kentucky.....	338
Tobacco and Its Relationships to Public Health.....	793
Hookworm in California Gold Mines. Ralph Nauss, M. D., Dr. P. H.....	439
Hoover, C. B., Chairman. Report of Sub-Committee on Sewage Works Opera- tion and Analytical Methods	548
Horwood, Murray P., M. S., and Schevitz, Jules, B. S. The Value of the Public Health Survey in the Public Health Campaign.....	113
Hospital Betterment Movement in California, The. W. E. Musgrave, M. D....	208
Hospital, Canton's New Kung Yee.....	807
Hospital, The Family Doctor and the General, in the Anti-Tuberculosis Cam- paign. F. C. Smith, M. D.	534
Howe, E. C. The Health of the College. Editorial.....	358
Howe, William A., B. S., M. D. School Health Service in New York State....	873
Hubbard, W. S., Ph. D. Methods of Coöperation between Municipal, State and Federal Officials on Pharmaceutical Preparations.....	1077
Hurtv. J. N., M. D. Discussion on Report of Joint Committee on Narcotic Drugs	1071
Hyatt, Thaddeus P., D. D. S. A Study in Dental Prophylaxis.....	739
Hygiene, Mental, and the College Student. Frankwood E. Williams, M. D....	341
Hygiene, Oral, Importance of, during Childhood. Harry B. Butler, D. D. S....	297
Hygiene and Public Health at the University of Kentucky, Department of. P. K. Holmes, A. M., M. D.	338
Hypochlorite Solutions. An Accurate Method for Determining the Alkalinity in. J. A. Wesener, M. D., and G. L. Teller, M. S.....	613
Imhoff Tanks, Clogdosing Devices, Effluents from Small. C. P. Rhynus.....	569
Importance of Oral Hygiene during Childhood. Harry B. Butler, D. D. S....	297
In Memoriam: William Crawford Gorgas. Robert E. Noble.....	250
The Public Health Work of Professor Sedgwick. George Chandler Whipple	361
India, Britain's Opium Policy in	49
Indol Formation, Influence of Peptone on, by Bacillus Coli. F. W. Tilley, M. D.	834
Industrial Application of Army and Navy Venereal Disease Records. Ray H. Everett and Mary Augusta Clark	829
Industrial Hygiene and Occupational Disease.....	96, 186, 285, 392, 481, 586, 692, 779, 868, 949, 1025, 1112
Industrial Medicine, Relation of to Public Health. Robert T. Legge, M. D., F. A. C. S.	62
Industrial Wastes in Relation to Water Supplies. Wellington Donaldson.....	193
Industry, Health Education in. C. E. Ford, M. D.	489
Infant Mortality, Breast Feeding in the Reduction of. J. P. Sedgwick, M. D. and E. C. Fleischner, M. D.	153

	PAGE
Infant Mortality in Detroit. George T. Palmer, D. P. H. and G. Arthur Blakeslee	502
Infant Mortality, Factors That Influence. Stewart G. Thompson, D. P. H.....	415
Infant Mortality, Measuring Rods of. Dwight M. Lewis, M. D.....	721
Infant Mortality Rates for Paris. Thomas J. Duffield.....	905
Infant Welfare Health Stations in Bridgeport, Conn.....	66
Infirmiry, Students', University of California. Robert T. Legge, Ph. G., M. D... ..	335
Influence of Peptone on Indol Formation by <i>Bacillus Coli</i> . F. W. Tilley, M. D.	834
International List of Causes of Sickness and Death.....	967
Irene Kaufman Settlement, Good Work of.....	748
Is the Health Center a Health Center? Need of a Positive Health Ideal in the Health Center. Philip S. Platt, M. A., C. P. H.....	221
Jackson, J. F. Real Needs of Rural Communities.....	570
Jaffa, M. E. Maintaining Standards of Animal Foods.....	23
Jordan, Edwin O., Ph. D. The Relations of Bacteriology to the Public Health Movement since 1872	1042
Kahn, R. L., Sc. D. The Wassermann Test in the Public Health Laboratory..	410
Kebler, Lyman F., M. D. Discussion on Report of Joint Committee on Narcotic Drugs	1071
Kelley, Eugene R., M. D., Chairman. Report of Committee on Full-Time Health Officer Legislation.....	902
Kentucky, Department of Hygiene and Public Health at the University of. P. K. Holmes, A. M., M. D.....	338
Knapp, H. J., M. D., Chairman. Report of Committee on Drugs and Nostrums	1073
Labor Camp Sanitation—A Basis for Education and Citizenship. R. Justin Miller	697
Labrador, Observations on Deficiency Diseases in. V. B. Appleton, M. D.....	617
Lactose Broth for Isolating <i>Bacterium Coli</i> from Water. Esther A. Wagner and W. F. Monfort.....	203
Laird, John L., M. D. and Conover, John R., M. D. Hand Disinfection—An Investigation of Various Preparations for This Purpose.....	816
Langworthy, H. V., and Willson, F. L. Comparison of Two Methods of Adjusting the Hemolytic System for Use in the Complement Fixation Test for Syphilis	532
Larner, Herbert B., S. B. Common Sense Versus Custom in the Appointment of Health Officials.....	143
League of Red Cross Societies, The.....	985
League of Women Voters, The Public Health Program of the. Valeria H. Parker, M. D.....	992
Legal Evidence, Birth and Death Certificates As. Henry Bixby Hemenway, A. M., M. D.....	1
Legge, Robert T., M. D., F. A. C. S. Relation of Industrial Medicine to Public Health	62
Students' Infirmary at the University of California	335
Legislation: State	85, 176, 279, 383, 473, 576, 681, 770, 859, 945
Federal.....	84, 175, 277, 383, 470, 675, 766, 855, 940, 1104
Legislation, Medical and Anti-Medical in California. Chester H. Rowell.....	128
Legislation, Report of Committee on Full-Time Health Officer.....	902
Leprosy, Epidemiological Study of an Endemic Focus of. Mark F. Boyd, M. D., and Warren F. Fox, M. D.....	628
LeRoy, Jorge, M. D. Public Health in Cuba.....	1048
Let Us Stop Guessing in Health Work. Editorial.....	247
Letters to the Editor.....	649, 756, 843, 927
Levine, Max. Notes on Bact. <i>Coli</i> and Bact. <i>Aërogenes</i>	21
Lewis, Dwight M., M. D. Measuring Rods of Infant Mortality.....	721
Measuring Rods of Mortality Rates.....	825
A Third Measuring Rod in Mortality Rates.....	917

	PAGE
Lipman, W. H., M. D., Chairman. Report of Committee on Preparation, Packing and Transportation of Food.....	265
Loeffler's Medium, Comparative Studies of Diphtheria Cultures of, with the Original Swabs Transported by Mail. C. C. Young and Minna Crooks.....	241
Looking Forward. Editorial.....	1086
Los Angeles County, County Health Administration in. J. L. Pomeroy, M. D....	796
Maintaining Standards of Animal Foods. M. E. Jaffa.....	23
Man of Good Sense Will Not Hesitate. Editorial.....	158
Maritime Quarantine a Constructive Health Agency. S. B. Grubbs.....	725
Marriner, Jessie L. Functions and Relationships of Bureaus of Child Hygiene and Bureau of Public Health Nursing in State Boards of Health.....	707
Massachusetts, A Brief Statistical Study of Recent Experience with Measles and Whooping Cough in. Johathan E. Henry, M. D., C. P. H.....	302
Mather Broadside, The.....	133
McCombs, Carl E., M. D. Reporting Communicable Diseases—A Physician's Point of View.....	624
Means, Philip Ainsworth. Sociological Background of Sanitation Work in Peru	17
Measles and Its Allies. James G. Cumming, M. D., Dr. P. H.....	785
Measles, The Toll of Whooping Cough and. Editorial.....	359
Measles and Whooping Cough, A Brief Statistical Study of Recent Experience with, in Massachusetts. Jonathan E. Henry, M. D., C. P. H.....	302
Measuring Rod in Mortality Rates, A Third. Dwight M. Lewis, M. D.....	917
Measuring Rods of Infant Mortality. Dwight M. Lewis, M. D.....	721
Measuring Rods of Mortality Rates. Dwight M. Lewis, M. D.....	825
Medical and Anti-Medical Legislation in California. Chester H. Rowell.....	128
Medical Profession, Public Health Activities and the. George C. Ruhland, M. D.	1062
Medical Service, Report of the Committee on, of the State and Provincial Health Authorities of North America.....	888
Members Proposed for Election to the A. P. H. A., List of.....	76, 169, 258, 370, 464, 571, 660, 759, 848, 928, 1014, 1094
Mental Defect, Social Aspect of. Harold W. Wright, M. D.....	431
Mental Health of Children. Glenn E. Myers, M. D.....	55
Mental Hygiene, Symposium on.....	420
Mental Hygiene and the College Student. Frankwood E. Williams, M. D.....	341
Methods of Coöperation between Municipal, State and Federal Officials on Pharmaceutical Preparations. W. S. Hubbard, Ph. D.....	1077
Mexico, Public Health in (Abstract of Pamphlet). Angel Brioso Vasconcelos, M. D.....	1052
Milberry, Guy S., D. D. S. Rôle of Dentistry in Personal Hygiene.....	53
Milk, Detection of Manural Pollution in, by the Anaërobic Spore Test. John Weinzirl, Dr. P. H.....	149
Miller, Harry M. Sanitation of Fruit and Vegetable Canneries.....	922
Miller, Malcolm Dean, M. D. Preliminary Report on the Prophylaxis of Whooping Cough.....	913
Miller, R. Justin. Labor Camp Sanitation—A Basis for Education and Citizenship.....	697
Mitchell, Harold H., M. D., C. P. H. The Need for Special Health Protection for Employed Adolescents.....	973
Model Health Code for Cities. Editorial.....	545
Monfort, W. F., and Wagner, Esther A. Lactose Broth for Isolating Bacterium Coli from Water.....	203
Mortality Rates. See also Infant Mortality Rates.....	
Mortality Rates, Measuring Rods of. Dwight M. Lewis, M. D.....	825
Mortality Rates, A Third Measuring Rod in. Dwight M. Lewis, M. D.....	917
Mosquito-Borne Diseases, Conquest of. C. V. Craster, M. D.....	538
Mothercraft Instruction for School Girls. May Bliss Dickinson, R. N.....	199

	PAGE
Multiplication Rate of Microörganisms Within the Body, Seasonal Variation in. William Firth Wells.....	636
Municipal Administration of Health and Welfare Departments. G. Hardy Clark, M. D.....	401
Musgrave, W. E., M. D.. The Hospital Betterment Movement in California....	208
Myers, Glenn E., M. D. Mental Health of Children.....	55
Narcotic Control, Some Recent Experiments in. C. E. Terry, M. D.....	32
Narcotic Drug Addiction, Symposium on.....	25
Narcotic Drug Addiction, Symposium on. Editorial.....	70
Narcotic Drugs, Report of Joint Committee on.....	1066
National Child Health Council, The. Courtenay Dinwiddie.....	995
National Health Council Launches Rotary Health Week. Donald B. Armstrong, M. D.....	1006
Nauss, Ralph W., M. D., Dr. P. H. Hookworm in California Gold Mines....	439
Need of Revision of Plumbing Regulations. Editorial.....	69
Need for Special Health Protection of Employed Adolescents, The. Harold H. Mitchell, M. D., C. P. H.....	973
Nelson, Thurlow C., Ph. D. Some Aspects of Pollution as Affecting Oyster Propagation	498
New York City, Decline of Tuberculosis in.....	746
New York State, School Health Service in. William A. Howe, B. S., M. D.....	873
New York State, Has Done in Health Centers, What. B. R. Rickards.....	214
Nicoll, Matthias, Jr., M. D., Chairman. Report of the Committee on Medical Service of the State and Provincial Health Authorities of North America..	888
Noble, Robert E. William Crawford Gorgas. In Memoriam:.....	250
Nomenclature of Tuberculosis. Nathan Van Patten.....	239
Notes on Bact. Coli. and Bact. Aërogenes. Max Levine.....	21
Nurse. See Public Health Nurse.	
Nurse the Sick, Who Shall? John Dill Robertson, M. D.....	108
Nutritional Problems, Third Annual Report of Committee on.....	166
Observations on Deficiency Diseases in Labrador. V. B. Appleton, M. D.....	617
Office System in Public Health Administration. Rollo Britten.....	639
Opium, Britain's Policy in India.....	49
Oral Hygiene, Importance of, During Childhood. Harry B. Butler, D. D. S.....	297
Outbreak of Smallpox with Observations and Methods of Control. Lonsdale J. Roper, M. D.....	138
Oyster Propagation, Some Aspects of Pollution as Affecting. Thurlow C. Nelson, Ph. D.....	498
Palmer, George T., D. P. H., and Blakeslee, G. Arthur. Infant Mortality in Detroit	502
Paris, Infant Mortality Rates for. Thomas J. Duffield.....	905
Parker, Horatio Newton, Chairman. Report of Committee on the Relation of Food to Disease.....	757
Parker, Valeria H., M. D. The Public Health Program of the League of Women Voters	992
Peptone, Influence of, on Indoll Formation by Bacillus Coli. F. W. Tilley, M. D.	834
Perkins, Roger G., M. D. Food Inspection in Cleveland.....	434
Perkins, Roger G., M. D., Chairman. Report of Joint Committee on Narcotic Drugs	1066
Peru, Sanitary Conditions in. Henry Hanson, M. D.....	13
Peru, Sociological Background of Sanitation Work in. Philip Ainsworth Means	17
Peru, Symposium on Sanitary Conditions in. Editorial.....	71
Pharmaceutical Preparations, Methods of Coöperation between Municipal, State and Federal Officials on. W. S. Hubbard, Ph. D.	1077
Phenol Coefficients. F. W. Tilley, M. D.....	513
Philippines, Results of Vaccination in the. Victor G. Heiser, M. D.....	142
Physical Education with Relationship to Public Health, Special Objectives of. Clark W. Hetherington.....	520

Platt, Philip S., M. A., C. P. H. Is the Health Center a Health Center? Need of a Positive Health Ideal in the Health Center.....	221
Plumbing Regulations, Need of Revision of. Editorial.....	69
Pollution, Some Aspects of, as Affecting Oyster Propagation. Thurlow C. Nelson, Ph. D.....	498
Pomeroy, J. L., M. D. County Health Administration in Los Angeles County..	796
Popular Health Opinion in California. Editorial.....	68
Practical Laboratory Diagnosis of Typhoid Fever. Aubrey H. Straus.....	729
Preliminary Report on the Prophylaxis of Whooping Cough. Malcolm Dean Miller, M. D.....	913
Preliminary Report on the Results of a Recently Passed Ordinance Requiring a Physical Examination of All Persons Connected with Food Handling in Restaurants, Bakeries, Grocery Stores, etc., A. L. B. Gloyne, B. S., M. D.	963
Preparation, Packing and Transportation of Food, Report of Committee on....	265
Present Status of the Health Center. Walter H. Brown, M. D.....	218
President Harding and Public Health. Editorial.....	648
Prevention of Endemic Goitre, The. Editorial.....	1010
Preventive Medicine, The Unsolved Problems of. Aaron Arkin, A. M., M. D., Ph. D.....	894
Privies and Sewage Disposal for Farms. William Paul Gerhard, Dr. Eng.....	564
Program of the Bureau of Social Hygiene of the California State Board of Health. Walter M. Dickie, M. D.....	306
Prophylaxis of Whooping Cough, Preliminary Report on the. Malcolm Dean Miller, M. D.....	913
Pryer, R. W., D. P. H., and Walker, W. F. Bactericidal Action of Water Treated by Ultra Violet Rays	703
Psychiatry, Relation of, to Public Health. Eva Charlotte Reid, M. D.....	425
Public Health Activities, Coördination of. Philip King Brown, M. D.....	999
Public Health Activities and the Medical Profession. George C. Ruhland, M. D.	1062
Public Health Administration, Office System in. Rollo Britten.....	639
Public Health Campaign, The Value of the Public Health Survey in the. Murray P. Horwood, M. S., and Jules Schevitz, B. S.....	113
Public Health in Cuba. Jorge LeRoy, M. D.	1048
Public Health Education and Mental Hygiene. Frankwood E. Williams, M. D..	420
Public Health and Hygiene at the University of Kentucky, Department of. P. K. Holmes, A. M., M. D.....	338
Public Health Laboratory Notes.....99, 187, 289, 395, 485, 590, 694, 782, 870, 952, Nov. xxviii,	1118
Public Health Laboratory, The Wassermann Test in the. R. L. Kahn, Sc. D....	410
Public Health in Mexico (Abstract of Pamphlet). Angel Brioso Vasconcelos, M. D.	1052
Public Health Movement Since 1872, The Relations of Bacteriology to. Edwin J. Jordan, Ph. D.	1042
Public Health Notes.....78, 171, 271, 381, 466, 573, 672, 761, 850, 935, 1017,	1096
Public Health Nurse, Health Centers as Seen by a. Elizabeth Ross, R. N.....	915
Public Health Nurse in Public Health and Welfare Administration, The Value of the. Charles J. Hastings, M. D., F. R. C. P. I.....	712
Public Health Nursing, Functions and Relationships of Bureaus of Child Hygiene and Bureaus of, in State Boards of Health. Jessie L. Marriner.....	707
Public Health, President Harding and. Editorial.....	648
Public Health Program of the League of Women Voters, The. Valeria H. Parker, M. D.....	992
Public Health, Relation of Psychiatry to. Eva Charlotte Reid, M. D.....	425
Public Health School, Harvard's New. Editorial.....	924
Public Health Survey, The Value of, in the Public Health Campaign. Murray P. Horwood, M. S., and Jules Schevitz, B. S.....	113
Public Health, Tobacco and Its Relationships to. P. K. Holmes, A. M., M. D..	793
Public Health Training, Standardization of.....	371

Public Health, Vitamins and Certain Aspects of Their Relation to. J. C. Drummond, D. Sc., F. I. C.....	593
Quarantine, Maritime, a Constructive Health Agency. S. D. Grubbs.....	725
Rat Extermination, What Health Officers Can Do to Promote. Edward A. Goldman	606
Ravenel, Mazyck P., M. D. The A. P. H. A., Past, Present and Future.....	1031
Discussion on Report of Joint Committee on Narcotic Drugs.....	1070
Real Needs of Rural Communities. J. F. Jackson.....	570
Record of a Year's Red Cross Accomplishment, The.....	1007
Red Cross Accomplishment, The Record of a Year's.....	1007
Red Cross Health Center, The American.....	227
Red Cross Roll Call, The.....	1012
Red Cross Societies, The League of.....	985
Reid, Eva Charlotte, M. D. Relation of Psychiatry to Public Health.....	425
Relation of Bio-Chemistry to Practical Hygiene. Editorial. Peter H. Bryce, M. A., M. D.	647
Relation of Industrial Medicine to Public Health. Robert T. Legge, M. D., F. A. C. S.	62
Relation of Psychiatry to Public Health. Eva Charlotte Reid, M. D.....	425
Relations of Bacteriology to the Public Health Movement Since 1872, The. Edwin O. Jordan, Ph. D.	1042
Relations of Society to the Drug Habit. Peter H. Bryce, M. A., M. D.....	812
Report of Committee on the Accuracy of Certified Causes of Death, Abstract of.	966
Report of Committee on Drugs and Nostrums.....	1073
Report of Committee on Full-Time Health Officer Legislation.....	902
Report of the Committee on Medical Service of the State and Provincial Health Authorities of North America.....	888
Report of Committee on Model Health Legislation.....	259
Report of Joint Committee on Narcotic Drugs.....	1066
Report of Committee on Nutritional Problems, Third Annual.....	166
Report of Committee on Preparation, Packing and Transportation of Food....	265
Report of the Committee on the Relation of Food to Disease.....	757
Report of Committee on Retail Distribution and Marketing of Foods.....	375
Report of Committee on Sewerage and Sewage Disposal.....	548
Report of the Committee of Sixteen.....	371
Report of the Committee on Smallpox.....	654
Report of Sub-Committee on Rural Sanitation.....	551
Report of Sub-Committee on Sewage Works Operation and Analytical Methods.	548
Report of the Representatives of the A. P. H. A. to the Third Decennial Session of the International Commission for the Revision of the International Classification of Causes of Sickness and Death, Held at Paris, France, Oct. 11-15, 1920	966
Reporting Communicable Diseases—A Physician's Point of View. Carl E. McCombs, M. D.....	624
Residence as a Civil Service Requirement. Editorial.....	750
Results of Vaccination in the Philippines. Victor G. Heiser, M. D.....	142
Review of Our Knowledge of Bacterium Tularensis. C. W. Chapin, M. D.....	529
Rhynus, C. P. Effluents from Small Imhoff Tanks Clogdosing Devices.....	569
Rickards, B. R. What New York State Has Done in Health Centers.....	214
Robertson, John Dill, M. D. Who Shall Nurse the Sick?.....	108
Rochester, N. Y., Tonsil-Adenoid Clinic and Hospital.....	455
Rôle of Dentistry in Personal Hygiene. Guy S. Millberry, D. D. S.....	53
Rooney, James F., M. D. Discussion on Report of Joint Committee on Narcotic Drugs	1069
Roper, Lonsdale J., M. D. Outbreak of Smallpox with Observations and Methods of Control	138
Ross, Elizabeth, R. N. Health Centers as Seen by a Public Health Nurse.....	915

	PAGE
Rotary Health Week, National Health Council Launches. Donald B. Armstrong, M. D.	1006
Rowell, Chester H. Medical and Anti-Medical Legislation in California.	128
Ruhland, George C., M. D. Public Health Activities and the Medical Profession	1062
Rural Communities, Real Needs of. J. F. Jackson.	570
Rural Sanitation, Discussion on.	564
Rural Sanitation, Report of Sub-Committee on.	551
Rural Sanitation, State Advice on. Editorial.	544
Sacramento Water Supply. J. R. Snyder, M. D.	1004
Sanitary Conditions in Peru. Henry Hanson, M. D.	13
Sanitary Control in the Manufacture of Foods and Its Economic Importance. George Grindrod	920
Sanitary Control of a Public Swimming Pool. George W. Simons, Jr.	234
Sanitary Inspection—A Review. Abel Wolman	598
Sanitation. See also Rural Sanitation.	
Sanitation in Alabama, Applied. George H. Hazlehurst and C. A. Abele.	741
Sanitation in Bakeries. Harry E. Barnard, Ph. D.	407
Sanitation of Bath Houses at Public Bathing Beaches. Stephen DeM. Gage and Attmore E. Griffin	1080
Sanitation of Fruit and Vegetable Canneries. Harry M. Miller.	922
Sanitation, Labor Camp—A Basis for Education and Citizenship. R. Justin Miller	697
Sanitation in Venezuela and Colombia. Jacob L. Crane, Jr.	145
Sanitation Work in Peru, Sociological Background of. Philip Ainsworth Means.	17
Schevitz, Jules, B. S., and Horwood, Murray P., M. S. The Value of the Public Health Survey in the Public Health Campaign.	113
School Girls, Mothercraft Instruction for. May Bliss Dickinson, R. N.	199
School Health Program, Health Teaching and the. C. E. Turner, M. A., C. P. H.	717
School Health Service in New York State. William A. Howe, B. S., M. D.	873
Scientific Democracy in America. Editorial.	1088
Seasonal Variation in Multiplication Rate of Microorganisms within the Body. William Firth Wells.	636
Sedgwick, The Public Health Work of Professor. George Chandler Whipple.	361
Sedgwick, J. P., M. D., and Fleischner, E. C., M. D. Breast Feeding in the Reduction of Infant Mortality.	153
Septic Tank, Single Story. G. Everett Hill.	568
Sewage Disposal for Farms and Privies. William Paul Gerhard, Dr. Eng.	564
Sewage Works Operation and Analytical Methods, Report of Sub-Committee on Sewerage and Sewage Disposal, Report of Committee on.	548
Seymour, M. M., M. D., D. P. H. Discussion on Narcotic Drug Addiction.	47
Shall It Be I or Y? Editorial.	158
Sherman, H. C., Chairman. Third Annual Report, Committee on Nutritional Problems	166
Simmons, R. R., M. D. Epidemiological Role of the Case of Cerebro-Spinal Meningitis	452
Simons George W., Jr. Sanitary Control of a Public Swimming Pool.	234
Single Story Septic Tank. G. Everett Hill.	568
Skinner, John F., Chairman. Report of the Sub-Committee on Rural Sanitation.	551
Sludge, The Use of Centrifuges for Dewatering. T. Chalkley Hatton.	957
Smallpox, Epidemiological Study of, in California. John N. Force, M. D., Gr. P. H.	119
Smallpox Incidence and Measures of Control in American and Canadian Cities, 1919 and 1920. Lee K. Frankel, Ph. D.	979
Smallpox, Outbreak of, with Observations and Methods of Control. Lonsdale J. Roper, M. D.	138
Smallpox, Report of the Committee on.	654

	PAGE
Smallpox Situation, The General. Editorial.....	751
Smallpox, Symposium on.....	118
Smith, F. C., M. D. The Family Doctor and the General Hospital in the Anti-Tuberculosis Campaign	534
Snyder, J. R., M. D.. Sacramento Water Supply.....	1004
Social Aspect of Mental Defect. Harold W. Wright, M. D.....	431
Social Hygiene, Program of the Bureau of, of the California State Board of Health. Walter M. Dickie, M. D.....	306
Sociological Background of Sanitation Work in Peru. Philip Ainsworth Means.	17
Some Aspects of Pollution as Affecting Oyster Propagation. Thurlow C. Nelson, Ph. D.	498
Some General Facts. (Symposium on Narcotic Drug Addiction).....	50
Some Recent Experiments in Narcotic Control. C. E. Terry, M. D.....	32
Special Objectives of Physical Education with Relationships to Public Health. Clark W. Hetherington	520
Standardization of Botulism Antitoxins. Ida A. Bengtson.....	352
Standardization of Public Health Training.....	371
State Advice on Rural Sanitation. Editorial.....	544
State Health Notes.....88, 178, 281, 387, 475, 578, 683, 772, 862, 946, 1020, 1110	
State and Provincial Health Authorities of North America, Report of the Committee on Medical Service of the.....	888
Stephen Smith Medallion, The.....	1013
Straus, Aubrey H. Practical Laboratory Diagnosis of Typhoid Fever.....	729
Student, College, Mental Hygiene and the. Frankwood E. Williams, M. D.....	341
Student Vaccination and the. Ray Lyman Wilbur, L. L. D.....	126
Students' Infirmary, University of California. Robert T. Legge, Ph. G., M. D..	335
Study in Dental Prophylaxis, A. Thaddeus P. Hyatt, D. D. S.	739
Sundwall, John, M. D., Ph. D. Supervision of Health in Colleges and Universities	327
Supervision of Health in Colleges and Universities. John Sundwall, M. D. Ph. D.	327
Swimming Pool, Sanitary Control of a Public. George W. Simons, Jr.....	234
Symposium on the Health Center.....	212
Symposium on Health Supervision in Colleges.....	309
Symposium on Mental Hygiene.....	420
Symposium on Narcotic Drug Addiction.....	25
Symposium on Narcotic Drug Addiction. Editorial.....	70
Symposium on Sanitary Conditions in Peru. Editorial.....	71
Symposium on Smallpox	118
Syphilis, Comparison of Two Methods of Adjusting the Hemolytic System for Use in the Complement Fixation Test for. H. V. Langworthy and F. L. Willson	532
Teller, G. L., and Wesener, J. A., M. D. An Accurate Method for Determining the Alkalinity in Hypochlorite Solutions.....	613
Terry, C. E., M. D. Some Recent Experiments in Narcotic Control.....	32
Discussion on Report of Joint Committee on Narcotic Drugs.....	1072
Testing of Antistreptococcus Serum. Ella M. A. Enlows.....	733
Theories Concerning the Causation of Disease. L. W. Feezer.....	908
Third Annual Report, Committee on Nutritional Problems.....	166
Third Measuring Rod in Mortality Rates, A. Dwight M. Lewis, M. D.	917
Thompson, Stewart G., D. P. H.. Factors That Influence Infant Mortality.....	415
Tilley, F. W., M. D. Influence of Peptone on Indol Formation by Bacillus Coli..	834
Phenol Coefficients	513
Tobacco and Its Relationships to Public Health. P. K. Holmes, A. M., M. D.	793
Tobey, James A. The Historical Development (of the Health Center).....	212
Toll of Whooping Cough and Measles, The. Editorial.....	359
Tonsil-Adenoid Clinic and Hospital, Rochester, N. Y.....	455
Transactions of the Conference of Health Officers and Faculty Members Regarding Problems Relating to County Health Work.....	662
Tuberculosis, Finding, Through Survey and Clinic. M. J. Fine, M. D.....	622
Tuberculosis in New York City, Decline of.....	746
Tuberculosis, Nomenclature of. Nathan Van Patten.....	239
Turner, C. E., M. A., C. P. H. Health Teaching and the School Health Program	717

Typhoid Fever, Practical Laboratory Diagnosis of. Aubrey H. Straus.....	729
Ultra Violet Rays, Bactericidal Action of Water Treated by. W. F. Walker and R. W. Pryer, D. P. H.....	703
Unsold Problems of Preventive Medicine, The. Aaron Arkin, A. M., M. D., Ph. D.	894
Use of Centrifuges for Dewatering Sludge, The. T. Chalkley Hatton.....	957
Vaccination, Results of, in the Philippines. Victor G. Heiser, M. D.....	142
Vaccination and the Student. Ray Lyman Wilbur, L. L. D.....	126
Value of Animal Experimentation to Mankind. George Hoyt Whipple, M. D..	105
Value of the Public Health Nurse in Public Health and Welfare Administration, The. Charles J. Hastings, M. D., F. R., C. P. I.....	712
Value of the Public Health Survey in the Public Health Campaign, The. Murray P. Horwood, M. S., and Jules Schevitz, B. S.....	113
Van Patten, Nathan. Nomenclature of Tuberculosis.....	239
Vasconcelos, Angel Brioso, M. D. Public Health in Mexico (Abstract of Pamphlet)	1052
Vegetables, Evaporation of Fruits and. W. V. Cruess.....	6
Venereal Disease Records, Industrial Application of Army and Navy. Ray H. Everett and Mary Augusta Clark.....	829
Venezuela and Colombia, Sanitation in. Jacob L. Crane, Jr.....	145
Virginia Plan of Coöperative County Health Work. W. F. Draper, M. D.....	801
Vitamins and Certain Aspects of Their Relation to Public Health. J. C. Drummond, D. Sc., F. I. C.....	593
Wagner, Esther A., and Monfort, W. F. Lactose Broth for Isolating Bacterium Coli from Water	203
Walker, W. F., and Pryer, R. W., D. P. H. Bactericidal Action of Water Treated by Ultra Violet Rays	703
Ward, Willard E., Chairman. Report of Committee on Retail Distribution and Marketing of Foods	375
Wassermann Test in the Public Health Laboratory, The. R. L. Kahn, Sc. D....	410
Water Analysis, Bacteriological Methods of, in the American Expeditionary Force. Edward Bartow and Robert Edman Greenfield.....	65
Water Supplies, Industrial Wastes in Relation to. Wellington Donaldson.....	193
Water Supply Inspected as Well as Analyzed, Have Your. Editorial.....	459
Water Supply, Sacramento. J. R. Snyder, M. D.	1004
Water Treated by Ultra Violet Rays, Bactericidal Action of. W. F. Walker and R. W. Pryer, D. P. H.....	703
Weinzirl, John, Dr. P. H. Detection of Manural Pollution in Milk by the Anaërobic Spore Test	149
Wells, William Firth. Seasonal Variation in Multiplication Rate of Microorganisms Within the Body	636
Wesener, J. A., M. D., and Teller, G. L., M. S. An Accurate Method for Determining the Alkalinity in Hypochlorite Solutions.....	613
What Health Officers Can Do to Promote Rat Extermination. Edward A. Goldman	606
What New York State Has Done in Health Centers. B. R. Rickards.....	214
Whipple, George Chandler. The Public Health Work of Professor Sedgwick..	361
Whipple, George Hoyt, M. D. Value of Animal Experimentation to Mankind..	105
Who Shall Nurse the Sick? John Dill Robertson, M. D.....	108
Whooping Cough, A Brief Statistical Study of Recent Experience with Measles and, in Massachusetts. Jonathan E. Henry, M. D., C. P. H.....	302
Whooping Cough and Measles, The Toll of. Editorial.....	359
Whooping Cough, Preliminary Report on the Prophylaxis of. Malcolm Dean Miller, M. D.....	913
Why Not Say, "A Complete Examination"? Editorial. C. Macfie Campbell....	458
Wilbur, Ray Lyman, L. L. D. Vaccination and the Student.....	126
Williams, Frankwood E., M. D. Mental Hygiene and the College Student.....	341
Public Health Education and Mental Hygiene.....	420
Willson, F. L., and Langworthy, H. V. Comparison of Two Methods of Adjusting the Hemolytic System for Use in the Complement Fixation Test for Syphilis	532
Winslow, C.-E. A., Chairman. Standardization of Public Health Training.....	371
Wolman, Abel. Sanitary Inspection—A Review.....	598
Wright, Harold W., M. D. Social Aspect of Mental Defect.....	431
Young, C. C., and Crooks, Minnie. Comparative Studies of Diphtheria Cultures of Loeffler's Medium with the Original Swabs Transported by Mail...	241

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No. 1

BIRTH AND DEATH CERTIFICATES AS LEGAL EVIDENCE

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Read before Vital Statistics Section, American Public Health Association, at San Francisco, Cal.,
September 17, 1920.

Birth and death certificates have a legal value that statisticians do not always realize. Citizenship, marriage, distribution of property and even disproof of crime may depend on proper birth registration. Certificates should be in standard form with certain definite facts plainly stated, and all handling or copying should be done by officials.

THE fact that records of births and deaths, as well as those of marriage and divorce, are commonly called "Vital Statistics," has unfortunately resulted in obscuring the equally important use of these records for legal evidence. This ignoring of the legal evidence side of the business is more natural in the United States because here such records are relatively recent, and they are as yet far too frequently imperfect for legal requirements. It sometimes happens that a more thorough appreciation of the legal evidence feature would also aid in obtaining statistical data.

It is commonly provided in birth and death registration laws that a copy of any birth, stillbirth or death record, when properly certified, "shall be *prima facie* evidence in all courts and places of the facts therein stated"; yet the form in which such certificates are made and the

form of the certified copy frequently render such evidence essentially worthless. When the form shall become more perfect and the certificates have been more carefully scrutinized from a legal point of view, the tendency must be an increased insistence upon such records for the chief evidence in all cases where practicable. This in turn must intensify the care with which certificates are made, and completeness of registration.

LEGAL USE OF BIRTH CERTIFICATES

Already in many states a copy of the birth certificate is required, either by statute or regulation, for admittance to the public school or for permission for child labor.

It may be demanded to establish age in order to obtain marriage license or right to elective franchise.

It may be demanded as evidence of eligibility to civil or military office.

It is frequently required to prove nationality and citizenship. Failure to produce such evidence during the World War resulted in the incarceration of many unfortunate individuals and even the confiscation of property of those suspected of being alien enemies. Failure to find such records seriously hampered the right of many citizens to travel, especially in foreign countries. During the war there was a great demand for copies of birth certificates to aid in establishing the status of individuals under the provisions of the draft.

In a fit of enthusiasm since the war a boy enlisted in the army. His services were needed at home to support a widowed mother who was not in good health. His freedom from the army enlistment could only be obtained through the filing of a certified copy of his birth record; for the law of the State at the time of his birth required the filing of a certificate for every birth.

In criminal trial as, for example, where age of consent is 16 and there is question as to the exact age of a young woman, only the original certificate or a certified copy of such legal record is conclusive, and upon its showing may be determined the innocence of a husband or his conviction as a felonious criminal. Under the guise of showing her a flat which her family might like to rent, a man in Chicago took a girl to a friend's apartment. Here he drugged and assaulted her. When arrested for the crime he claimed that the assault was with her consent. Had she been over the age of consent the evidence would not have convicted him, as there was only the girl's statement against his, but the certificate of birth showing her age as under 16 barred his defense.

Conversely; where a man, in good faith, married a girl of seventeen against her parents' wishes, the proof of the girl's age prevented his conviction either for rape or abduction.

Copies of certificates of birth are most important evidence of rights in heirship and in title to property, and in claims for pensions. They may be required to prove legitimacy.

LEGAL USE OF DEATH RECORDS

Certified copies of certificates of death are frequently required in settlement of claims for insurance, pension, and in damages for personal injury cases.

Fact and date of death as shown in death certificates may be important evidence in proof of heirship, title to property, legitimacy, or legality of marriage, and incidentally for defense or conviction in criminal prosecutions.

An Italian woman died in Illinois. Some years later her husband desired to marry again in Italy, but before he could do so he was required to file a certified copy of the certificate of death of his former wife. Such a certificate was not on file in the state office.

Both certificates of birth and death are valuable evidence in the prosecution of illegal practitioners of medicine or midwifery.

STANDARDS OF REQUIREMENTS

Written With Ink.—Because these certificates are permanent legal records, the first requirement must be that they be made with unfading ink and in legible form. It is desirable that most of the certificates be made with typewriter, but all signatures must be made with pen and ink. No word forming part of the certificate should be written with lead pencil nor with indelible pencil.

In English.—The law should specify that all certificates must be made in English. Many certificates filed in Illinois, especially those of birth written by midwives, are written in foreign language, and not with English letters.

Completeness.—It is important that each record be made complete; first, to establish fully the identity of individuals, and, secondly, to record the facts. The *full name* is required. This is especially

true as to the names of the subjects of birth and death certificates. (At "No. 2" on standard form certificates.) In violation of this provision, certificates are frequently received which have only initials of the given name or names, or with some pet nickname. A certificate giving name as "Mrs. John Jones" is not proper. Her given name should be stated (with preferably her maiden name), as "Rachel Williams Jones."

In this place on birth certificates the family name at least should always be given. For uniformity, and to prevent confusion, the family name should always be at the right of the line, and it would be well if the law so specified distinctly.

It would also be well if the law required the naming of children within ten days after birth, perhaps empowering the local registrar with the duty of naming all children unnamed in the certificates returned to him. When a birth is reported without the name of the child, the supplemental report giving name should be made on a specified form. This should be attached to the back of the original certificate and the name written on the face of the certificate in red ink with memorandum on the margin showing when and by whom this addition is made, and the source of information.

Place, and date of birth or death, should be clearly stated in the certificate, and also the usual residence.

For cases in heirship it is important that record be made of number of children of the mother born alive and living at the time of birth recorded, and the number born alive, but dead at time of birth recorded, and in cases of plural birth that fact should be recorded and the number of this child in the plural birth.

From the legal point of view, where insurance or personal injury claims exist, it is frequently important that a record be made as definite as possible as to the duration of the cause of death and of contributory causes.

Signatures.—The name of the physician at the bottom of a certificate of birth or death is not a mere memorandum that he attended. It is his personal attestation to the facts stated. His name must, therefore, be signed with pen and ink, in person. He cannot legally authorize anyone else—neither his office clerk, a nurse nor an undertaker—to sign his name for him. This is also true in hospital cases. The duty of making the certificate rests upon the last attending physician. Being a personal attestation it is not proper to give a firm name, such as "Brown and Hughes," though the signature "Brown and Hughes, by James B. Hughes," might be accepted.

What is said as to the signature of physicians applies also to the name of the "Informant" and that of the undertaker on death certificates. All of these are personal attestations, and must be signed in person. They must not be affixed with rubber stamp or by typewriter.

Usage would perhaps sanction the use of a stamp for insertion of the date of filing and name of local registrar, but if stamp be used by a deputy, he should add his name prefixed by the word "by," or "per."

For purposes of evidence, it would be better if in death certificates at the space for the informant's name, the word at the left of the line be "(Signed)," and under the right of the line the word "Informant" be given, adding a line to show "Relationship to the deceased," before the "Address." These changes would make more evident the value of the statements attested, and the fact that the certificate must be signed.

Substitutes.—It not infrequently happens that after a certificate has been filed a substitute certificate is offered for filing. In all such cases both forms should be preserved. The substitute is frequently made for some special legal purpose and the fact that a substitute has been made after legal action in the

case has begun materially weakens its value as evidence.

Alterations.—There should be no erasures or additions on the certificate; but if additions or corrections be necessary they should be attested by the person so writing. When done in a registration office such additions should be made in red ink, and on the margin should be given the date of correction, source of information, and signature of correcting officer. All bases for such correction should be filed and preserved, becoming part of the legal record. Correction certificates should always contain the pen and ink signature of the person making correction.

A registrar, clerk, transcriber or other person may know or believe that an error has been made in the spelling of a name, in a date or other item. If he, though acting in good faith, corrects the certificate without making a formal identification of the correction, the original maker of the certificate, when placed upon the stand, will be made to identify legally the certificate in full.

Coroners' Cases.—In Illinois, for example, the Coroners' Act requires that the coroner must hold an inquest in every case where death is supposed to be the result of "violence, casualty, or any undue means." There are similar statutes in other states. In all such cases only the certificate of the coroner is legal. The evidence of the physician, if called for, should be given at the inquest. When the inquest is held by a Deputy Coroner, under the Illinois statute, he must sign the name of the coroner to the certificate adding, "by _____, Deputy Coroner."

There is a common misunderstanding as to the object of a coroner's inquest. The primary object is not to discover the cause of death, but to make an immediate legal record of all the facts pertaining to the death. Originally the coroner was an officer of the Crown appointed to take charge of the property of

deceased felons, which property was escheated to the Crown. The object of the inquest was to make record of the facts showing that the deceased was in fact a felon.

In a personal injury case, either in criminal trial or action for civil damages, so much time generally elapses between the death and the trial of the case that justice might be difficult without the aid of the coroner's record, made while witnesses are easily found and before their memory has had time to be dimmed.

It is sometimes thought that because an injury was received in the presence of many witnesses, and there is no doubt as to the facts, an inquest is not necessary. On the contrary, such a condition, by making sure the fact of violence or injury, gives no possible excuse for omitting the inquest.

In every case of abortion or miscarriage there must be a primary suspicion of causation by some undue means. In self-defense, when death results, the physician in attendance should demand an inquest to get an impartial legal record of the facts. If, on the contrary, a physician makes a certificate, and through acceptance of the certificate the body is disposed of without an inquest, he is practically powerless to defend himself should gossip accuse him of crime. The fact that he aided thus in the illegal disposition of the body may be considered as evidence substantiating the charge of performing an illegal operation.

For statistical as well as legal purposes, the insistence upon the coroner's inquest is important. There are certain questions which are prominent in the coroner's mind, but they are generally overlooked by physicians. Did an injury occur in the operation of a mill, a mine, or a railroad? Did death from suffocation or burn occur in a forest fire, or a burning building? Was a gunshot wound homicidal, suicidal or accidental? Did accidental death result through someone's criminal negligence? All of these questions are important legally and statis-

tically, but none are prominent in the work of physicians and surgeons, as such.

The coroner's verdict is never admissible as evidence in any court. The records of the inquest are admissible.

Certified Copies.—The Illinois law, like those in other states, provides for the issuance of certified copies of birth and death records, either by the local registrar, the county clerk, or from the State office. In one insurance case certified copies were presented in evidence to the court from each of these three sources. On comparison, it was found that they differed in essential particulars, no two being the same. The local registrar makes two copies of each certificate, one for his own files and one for the county clerk. The original is sent to the State Department. Consequently, the copies sent from the local registrar and from the county clerk were simply certified copies of uncertified copies. As evidence they are of little value, and the law should not sanction such uncertainty.

Certified copies should only be made from the original certificate.

Even then for purposes of evidence the ordinary certified copy is of inferior value. It gives no hint of legal irregularity. It would be desirable if the law required that when used as legal evidence the certified copy be made only by photographic process, and from the original certificate. Such reproduction would better enable the reader to judge whether it was in fact signed by the informant, the physician and the undertaker. It would also avoid errors in deciphering. In the case previously mentioned, where three certified copies failed to agree, the trouble was that one word was differently deciphered by three transcribers.

Preservation.—Original certificates of birth and death are important legal documents. As such, they should never be permitted to pass out of official hands. The practice of permitting them to be transcribed, or copied in part, by non-official persons, opens the door for alterations and loss.



THE HEALTH CENTER AND THE MATERNITY NURSE



Examples of Red Cross coöperation with local health agencies.

EVAPORATION OF FRUITS AND VEGETABLES

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Read before Food and Drugs Section, American Public Health Association, at San Francisco, Cal.,
September 13, 1920.

More and more the world is utilizing dried fruits and vegetables, the war having given impetus to the preparation of the latter. Here are plain statements of processes and values deduced from scientific institution investigations. Evaporation is in its infancy while sun drying is very ancient. Evaporated products are better looking but more costly.

SUN DRIED VERSUS EVAPORATED FRUITS

The preservation of fruits and vegetables by drying is a process as old as civilization itself. Sun dried raisins and figs undoubtedly formed an important part of the diet of the peoples of Biblical times.

At the present time, with the exception of apples, practically all of the dried fruits of the world's commerce are prepared by sun drying by methods in many cases very similar to those employed by the ancients. Much of the fame of California's fruits is due to National and even world-wide advertising of "Sun-Maid," "Sunsweet," and "Suncured" products.

Since the sun dried and sun cured fruits then have become so firmly established and are consumed in such enormous quantities throughout the world, the question arises, "Why the present interest in the drying of fruits by artificial means?" There are several underlying causes for the present increased activity in the building of evaporators. The financial loss by damage from early rains has caused the fruit growers of Australia and California to seek means through which such damage could be minimized or eliminated. The installation of evaporators to be used in times of unfavorable drying weather has, there-

fore become a general practice. Growers owning such evaporators still dry most of their fruit in the sun.

Other growers, however, are installing evaporators to replace sun drying. They give the following reasons for preferring evaporation to sun drying. First, the fruit dried in an evaporator is cleaner and less liable to insect injury than that dried in the open. Second, the claim is made that evaporated fruits are more attractive in appearance, flavor, and general quality than sun dried fruits and should therefore, when processes become standardized, command higher prices than their sun dried competitors. A third contention made for the evaporator is that in its conditions are at all times under the control of the operator. For this reason the fruit may be dried to a more constant moisture content and will be of more uniform quality than when dried in the sun. As a fourth consideration, most fruit, as it comes from the evaporator, is ready for packing and requires no additional processing. The evaporator requires less space than does a sun dry yard and is therefore more economical in use of land. Fruits dried in an evaporator require very much less bleaching than when sun dried; a fact which will appeal strongly to those who oppose the use of sulfur dioxide in fruit drying.

The cost of drying most fruits in an evaporator is, when all factors are considered, more expensive than sun drying. For this reason, the permanency of the present "fruit evaporation fad" in California will depend to a large degree upon whether the superior quality claimed for evaporated fruits will command a greater price.

EVAPORATED AND SUN DRIED VERSUS CANNED VEGETABLES

When we consider the drying of vegetables the situation is reversed. There is no doubt about the superiority of the evaporated article. Sun dried green sweet corn is good and is popular in most corn growing regions but the evaporated article is so much more attractive in appearance and better in flavor that it is in an entirely different class from the usual sun dried corn. Most vegetables when dried in the sun lose their natural color and flavor and become tough and difficult to cook. During the days of the gold rush to the Klondike in Alaska large quantities of vegetables were dried both in the sun and in evaporators. Judging from the accounts of those who used these vegetables they were of uniformly poor quality. They were of poor color and flavor and very tough, whether sun dried or evaporated. The vegetable drying industry lasted for a few years only at that time and then became practically extinct until the World War had been under way for a year or more. Then the expeditionary forces of England and the Colonies could no longer be adequately supplied with fresh and canned vegetables. Canada and the United States were called upon to furnish evaporated vegetables in very large quantities for the British forces.

Under the stimulus of very favorable contracts the owners of apple kilns in the eastern United States (principally New York) and southern Canada took up the evaporation of vegetables. Dried potatoes and soup

mixtures were most in demand. Little was known of the proper methods of preparing and drying the vegetables. Consequently much of the finished product was of very poor quality and in some cases practically inedible.

When the United States entered the War the demand for evaporated vegetables increased rapidly and within a few months after the first American troops had landed in France evaporators in many sections of this country were busy filling or attempting to fill Government orders.

A grant was given the Bureau of Chemistry of the United States Department of Agriculture to investigate master Corps Subsistence Division evaporation problems. The Quarter-tailed well trained chemists to aid the new industry. Experiment stations throughout the United States quickly and energetically took up the study of vegetable evaporation. As a result of these efforts very rapid progress was made in the knowledge of the proper methods of preparing the raw vegetables, temperatures of drying, and packing the finished products in such a way as to insure their keeping against mold and insects.

Although war contracts terminated soon after the armistice, many of the companies who had engaged in vegetable evaporation during the war continued the operation of their plants in an attempt to place their products on the civilian market and to popularize "evaporated" and "dehydrated" vegetables. Results to date have been rather disappointing and many former enthusiastic vegetable evaporator owners have fallen by the wayside because they could not go on indefinitely without profitable returns for their products.

A few large and well financed concerns are still in the field. One such company has sold by means of national advertising in the illustrated journal issued monthly by the management of

the company over \$200,000 worth of evaporated vegetables and fruits in one year. The prices received were very attractive because the products were sold direct to the consumer. This company's methods should prove instructive to others engaged in this field.

Another successful firm in southern California has erected a plant costing \$200,000 and capable of producing \$800,000 worth of evaporated vegetables and fruits annually. This company is advertising extensively and developing a good market for its products. It is owned and operated by Japanese.

On the other hand, one large company which furnished the War Department with several million dollars' worth of evaporated vegetables has recently given up, temporarily at least, its attempt to place its product on the general market.

FIGURE 1



Typical Scenes in Sun Drying Yards

In other words, although the methods of evaporating and packing evaporated vegetables have reached a fairly high degree of perfection, a popular demand for these articles has not been aroused. In fact, many who have used evaporated vegetables once do not repeat the trial. Their objections are that the evaporated products require soaking overnight before cooking, require a long period of boiling to render them tender, and after cooking are not so palatable as the fresh vegetables. We believe that all of these objections can be overcome by the proper application of existing knowledge and by further investigations where necessary.

Compared to canned vegetables the evaporated vegetables occupy only about one-tenth or less space and weigh only about one-twentieth as much as the canned article and brine in most cases. The color of the evaporated product is, if properly prepared, much brighter than that of the canned article. This is especially true of vegetables of green color, such as spinach, green peas, and string beans. Some vegetables, such as asparagus and tomatoes, have not as yet been satisfactorily evaporated. Because of the enormous saving to be effected in weight and in tin plate, and because of their good quality when properly prepared, evaporated vegetables should when their value is fully appreciated replace canned vegetables to a large degree. It seems economically very wasteful to place in cans vegetables containing 95% of water and add water or brine to fill the spaces; place the cans in heavy boxes and ship the canned articles long distances at great expense for express or freight, when the same vegetables may be dried to less than 10% of their green weight, packed in light cartons, shipped to the consumer, who will return to the vegetables the necessary water. Evaporation does not in any way (as far as we

can judge with available data) affect the food value of the vegetables.

FIGURE 2



Large Evaporating Plant at Atascadero, Cal.

RESULTS OF INVESTIGATIONS IN THE EVAPORATION OF FRUITS

In coöperation with A. W. Christie and other members of the Experiment Station the writer has carried on during the past two years both laboratory experiments and tests upon an industrial scale in the evaporation of fruit. A great deal of work has also been done by the Dehydration Division of the United States Department of Agriculture Bureau of Chemistry by Prescott, Mangels, Nichols, Powers, Gross and others. Caldwell, Gore, Gould, and Beattie, all of the Department of Agriculture, have contributed much to our knowledge of the evaporation of fruits.

Our large scale investigations have been carried out principally in our industrial size evaporators at the University Farm at Davis, Cal., although privately owned evaporators at different points in the state have also been utilized. Some of the results obtained from our experiments are given herewith.

Grapes:*—The evaporation of grapes has assumed considerable importance because of the fact that the Prohibition amendment has made necessary the use of all possible means to dispose of the wine grape crop of California. The

demand for dried wine grapes is good. The grapes of Fresno district can be dried in the sun; those of the coast counties must be dried by artificial means; hence the interest in evaporators for grapes. We have drawn the following conclusions from our experiments:

1. The type of evaporator erected at the University Farm for our experiments is very satisfactory for the purpose and a great improvement upon the kiln and stack evaporators in use for apple and prune drying. It is not expensive to build and is economical in its use of fuel, power, and labor. Bulletin 322 gives specifications and sketches for this evaporator. It will hold six tons of grapes per charge. Its cost is about \$3,750.

2. Grapes require dipping in hot lye to "check" or crack the skins before drying. Seedless varieties and Tokay grapes require a $\frac{1}{2}\%$ solution for about 5 seconds at 100° C.; most other varieties require a 3% solution for 20 seconds or more, followed by rinsing in water. Dipped grapes dry in less than one half the time required for undipped grapes.

3. Steaming before drying may be used to replace dipping but steamed grapes do not dry so evenly as does the lye dipped fruit; although they dry nearly as rapidly.

4. Sulfuring is not necessary for red or black varieties, but a very short exposure to sulfur fumes is desirable with white varieties. Where three hours' sulfuring is used for sun drying, a half an hour's exposure to sulfur fumes will give equally good results in the evaporator.

5. Wooden slat trays are preferable to screen trays because the fruit does not stick so badly to the wooden trays and because the screen trays corrode from sulfur fumes or the fruit acids.

6. If dried grapes are to be stemmed they must be reduced to about 10% or less moisture but will

*See Bulletin 322, University of California Experiment Station, 1920. *The Evaporation of Grapes*, by W. V. Cruess, A. W. Christie, and F. Flossfeder.

"carry" 20% or more moisture without spoiling. This makes necessary the processing of the stemmed raisins with water or steam to return the moisture which represents the difference between that which a normal raisin contains and that of the freshly stemmed article.

7. A temperature of 165° F. to 170° F. may be safely used without injury to the product with red or black grapes, but somewhat lower temperatures of drying are advisable for white varieties. The grapes are most sensitive to heat when nearly dry. During the initial stages of drying, temperatures of 185° F. to 190° F. have been used without noticeable injury to the dried product. Grapes dry twice as rapidly at 170° F. as at 135° F. to 140° F.

8. Evaporation did not give higher yields than sun drying when only the water-free dried product was considered. Sulfured grapes seemed to yield slightly more dry product (on above basis) than did the unsulfured grapes. This may be due to the action of sulfurous acid in reducing oxidation processes.

9. It was found that at least 75% of the "spent" or "exhaust" air from the evaporator could be returned to the furnace room, reheated, and used over again in drying. This results in greater economy of fuel without reduction in drying time.

10. Where stove oil and Diesel oils are used in suitable burners the products of combustion may be passed directly over the fruit without production of a disagreeable odor or flavor in the fruit. This method of heating the air used in drying results in a great economy of fuel.

11. The horizontal air blast type of drier was found to be superior to the vertical air blast and "gravity air flow" types of evaporators for grapes because of the more rapid, more uniform, and more economical drying.

12. The multivane type of fan was found more suitable for evaporators than the disc type of fan. The suction type of fan is believed to be more satisfactory than the blast type.

Apricots:—1. The results with apricots were similar to those obtained with grapes. The principal objection made to the evaporated fruit was that it retained its natural color. If green colored fruit was placed in the drier it came from the drier green in color; whereas in the sun, green colored fruit becomes during the drying process golden yellow in color (although still unripe in flavor).

2. The fruit required much less sulfuring in the evaporator than in the sun.

3. The evaporated fruit when soaked in water and cooked could not be distinguished from the cooked fresh fruit by those who compared the two.

4. Nine to fourteen hours was required for drying at 165° F.

Pears:—Numerous laboratory scale experiments and a commercial size test on eight tons of Bartlett pears indicated that:

1. A high humidity, at least 40%, must be used during drying to prevent "case hardening" and consequent very slow drying of the fruit.

2. In order to obtain the clear light amber appearance of the sun dried fruit the pears must be sulfured for at least 24 hours and temperatures of 110° F. to 140° F. used in drying; 140° F. seems to be the maximum.

3. Temperatures of 150° F. to 165° F. or above cause serious caramelization of the fruit sugars and darkening of the fruit.

4. Pears may be lye peeled and dried in 12 to 15 hours where the unpeeled fruit requires 36 to 48 hours under the same conditions.

5. The evaporated fruit, although less attractive in appearance than the sun dried article is superior to the latter in flavor and cooking quality.

Peaches:—1. Evaporated peaches were superior in every way to the sun dried product.

2. It was found that a temperature of 165° F. could be used safely.

3. Air of a humidity of 25% to 30% gave better results than dry air, there being less case hardening with the higher humidity.

4. Lye peeled peaches were very attractive in appearance and dried in much less time than the unpeeled fruit. It is believed that the increased quality given by lye peeling would command a price enough higher than that for the unpeeled peaches to more than pay for the additional cost of lye peeling. The saving in time and fuel in drying is about 50% for the peeled fruit.

Prunes:—1. Evaporated prunes have proved to be considerably more attractive in appearance and flavor than the sun dried prunes. The evaporated fruit possesses a lighter colored flesh and more fresh prune flavor than the sun dried product.

2. Prunes were dried in the laboratory evaporator in 8 to 12 hours and in industrial size evaporators in 15 to 24 hours.

3. Temperatures up to 165° F. may be safely used.

FIGURE 3



University of California Evaporator Showing Cars and Trays

4. Lye dipping is advisable, although steaming is used by some plants successfully to hasten drying.

Figs:—1. Black Mission figs were dried in 6 to 8 hours at 150° F. although the fruit was small. Smyrna figs tended to split and "drip" juice and syrup during drying. Probably lower temperatures of drying will be necessary.

2. The figs should be allowed to dry partially on the tree before drying.

Other Fruits:—Berries, bananas, and apples have been dried experimentally upon a small scale for the purpose of improving the methods in use commercially but not enough has been done with these fruits to warrant changes in present practice. Sulfurous acid was found to combine with the peroxide of apples and thus check browning. It apparently does not combine with the oxidase itself. We are considering the apple oxidase and organic peroxide as separate and distinct bodies.

RESULTS OF INVESTIGATIONS IN VEGETABLE EVAPORATION

Preliminary Treatment:—It has been found by Nichols* and others that unless most vegetables are treated to destroy or inhibit oxidizing enzymes, the dried product will darken in color slowly and finally become very unattractive in appearance. Our experience has been that blanching in water or steam is preferable to sulfuring to prevent darkening. Sulfured potatoes are tough and tasteless although of beautiful color, while blanched dried potatoes cook readily and are of good flavor. Blanching seems also to check toughening of the vegetables and renders them more tender, in addition to making them more attractive in color.

Temperature of Drying:—Relatively low temperatures, 110° F. to 140° F.,

* P. F. Nichols. A Brief Summary of the Activities of the United States Department of Agriculture in Dehydration. Pp. 133-136 of Supplement to the Monthly Bulletin of Horticulture of Department of Agriculture, Sacramento, March, 1920.

and rapid air flow give better products than high temperatures, 150° F. to 170° F. This fact is very largely the reason for certain investigators and manufacturers desiring to designate such a method of drying as "Dehydration" rather than "Evaporation." In other words, they would regard "Dehydration" as a carefully controlled drying process and "Evaporation" as drying by the use of machines which cannot be accurately controlled and by use of higher temperatures than those used in the less carefully controlled outfits. Personally, the writer agrees with A. W. Christie and his committee in their recommendations that for the present at least dehydration and evaporation of fruits be considered synonymous terms.

Moisture Content:—Most dried vegetables, if low in sugar, spoil by mold or fermentation if they contain 22% or more moisture. Sugary vegetables may contain slightly more water without spoiling. The vegetables retain their flavor and color best at a moisture content of less than 8%, according to Nichols. Air-tight packages are necessary to prevent entrance of moisture in humid climates and loss of moisture in very dry regions.

Humidity:—A relatively high humidity during the initial stages of drying is desirable in order to prevent case hardening. This is especially true of potatoes. High humidities probably also permit the use of higher temperatures during drying.

Insect Control:—Great embarrassment both financial and mental has been brought upon some producers of evaporated vegetables because their products have been returned to them badly infested with insects. Control of insects is probably one of the most im-

portant problems before the producer of dried vegetables. Fumigation with carbon bisulfide and with prussic acid is used but the best results are obtained by heating the dried products to 140° F. or above at the time of packing. Insect-proof packages must be used. Friction-top cans are satisfactory for the purpose.

Machinery:—There is opportunity for much improvement in the machinery used in preparing vegetables for drying and for the adaptation of the machinery used in canning to the preparation of vegetables for drying. As an instance of such adaptation we may cite the successful use of the peach lye peeler for the peeling of root vegetables with lye.

SUMMARY

1. The evaporation of fruits by artificial means is at present very popular in California, but has not yet to any appreciable degree replaced sun drying. Its future development depends upon the relative prices paid the producer for sun dried and evaporated fruits.

2. In general evaporated fruits are superior to the sun dried in flavor and appearance but are more costly to produce.

3. The University of California and the United States Department of Agriculture are both actively engaged in investigating processes of evaporating fruits and in determining which of the many types of evaporators now in use are most efficient and satisfactory.

4. The vegetable evaporation industry is still in the embryo stage. It is impossible to predict its future in spite of the real merit of the products. It is believed that the industry has possibilities quite as great as those of the vegetable canning industry.

The papers on Smallpox, Vaccination and Animal Experimentation that were presented at the San Francisco meeting of the Association will be published in the February issue of the JOURNAL.

SANITARY CONDITIONS IN PERU

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IN SPEAKING of the sanitary conditions in Peru it is difficult to know where to begin. In my case, I had heard of various epidemics existing in this country, but had no definite conception of what the conditions might be or the true nature of the causes. Having been in Panama in the capacity of Chief Sanitary Inspector of the Canal Zone and later as Assistant Chief Health Officer, I had acquired the usual highly critical frame of mind for the presence of mosquitoes and flies, as well as the almost extreme exactions for general cleanliness. Those who are familiar with sanitary conditions of the Canal Zone will appreciate what this means.

As a rule, the Pacific Coast steamers call at the first port in the north of Peru, which is the famous port of Paita. The cause of this fame will be discussed later. The harbor of Paita is one of the best on the coast of Peru, and is the only available port for the Department of Piura. It is protected from rough weather and heavy swells by a point of land on the west side of the harbor, which forms a semi-lunar bay in which vessels, large and small, can at all times lie tranquilly at anchor. Here one gets his first impressions of what sanitary conditions in Peru may be.

Paita is a town of about 3,500 inhabitants, the population having remained about the same for the last 20 years. It lies on the beach and has for its background the steep, cliff-like edge of the Paita plateau. The plateau is about 300 feet above sea level and is an arid desert, where rain falls only in limited quantity and at one season of the year, March and April, and sometimes only in appreciable quantity once in a cycle of years.

This aridness is characteristic of the entire Peruvian coast. For water, all the valleys are dependent upon the streams and rivers coming down from the melting snows of the mountains. Well water is available in some sections, but in most places towns and villages are dependent for the water supply upon the rivers, on the banks of which nearly all are located.

PLATE I



*A garbage dump forms the bank of the water
supply of the city*

As a rule, the water is limited in quantity and there is a great deal of economy in its use, with all the natural consequences. The peones and some who consider themselves in a higher class have acquired the habit of going unwashed. Their hands, their faces and their clothes are remarkably dirty. It would be hard to estimate when they were last washed, if ever. Some work in this condition as cooks in the houses of presumably respectable families, where they are seldom seen by the housewife, who does not

seem to take any effective interest in the appearance of the kitchen. The kitchen is the dirtiest, darkest place about the house, and it is quite an exception to find one that is kept with any pretense of cleanliness. It seems that no attempt is made by the majority of Peruvian housewives to know how the kitchen is being managed, or whether it is ever cleaned. From what I have seen, I am of the opinion that most kitchens never are cleaned, because filth and garbage are so frequently found scattered about the premises. As a rule, the Peruvian kitchen is separate from the house and usually quite distant, and as inconvenient a place to work in as could be devised. There are some who claim that cleanliness is over-estimated in sanitation, and to such I can only extend an invitation to spend some time in Peru.

The almost universal scarcity of water has probably been the original cause of the development of these filthy habits. The lack of water in many sections has prevented the taking of baths, and even the proper washing of one's hands and face. This remarkable condition can only be appreciated by those who have traveled through such a country.

The water for drinking and general household purposes is kept in earthenware jars, called tinajas, from which the dregs are seldom, if ever, emptied. When the supply is running low, the last little portion, with its sediment, animal life, etc., remains in the jar and fresh water is added. An example of the condition of a fresh water supply is shown by Plate I, the shore of the Piura River, the supply for the town. All of the bank here displayed is a garbage dump, and the Cholo in the foreground is getting a donkey load of water for household distribution. In cases where this system is practiced the mosquitoes, culex and especially *Stegomyia*, have found ideal breeding places. They deposit their eggs in the tinajas and often breed very profusely in the water used for household purposes. The larvæ, especially the

Stegomyia, have a tendency to stay well toward the bottom of the container and hence develop very freely in about 95% of the houses. This has been the main factor in the spread of yellow fever in the northern department, where I have

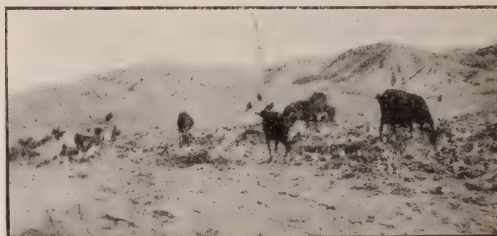
PLATE II



In such lily ponds breeds the Anopheles, and in the surrounding district the malaria rate is practically one hundred per cent

been engaged for the last year as Director of the Sanitary Campaign for the eradication of yellow fever. *Stegomyia* are abundant in most sections of the country, but especially in the northern department (Piura) where the warm climate is propitious to their propagation. In this department the most serious sanitary problem during the last year has been the yellow fever epidemic which existed there from June, 1919, till

PLATE III



In these garbage dumps, not far removed from habitations, may be seen the goat, the scavenger dog and the buzzard

August, 1920. There were about 3,000 cases with between 500 and 600 deaths. At the present writing, October, 1920, the epidemic seems to be entirely dominated, and there has been no new case for more than two months. The *Stego-*

mya index is being watched, and work is continually directed towards the destruction of its breeding places in all the towns where yellow fever existed during the period of the epidemics. All this yellow fever resulted from the apparent necessity for conservation of water.

PLATE IV



Houses in one of the worst plague sections of the city of Païta

As a contrast to what has been said of the scarcity of water and the evils resulting therefrom, there are conditions where there seems to be an excess, resulting in another mosquito-borne disease, viz., malaria. This occurs in the valleys and along the rivers where there are faulty irrigation systems. On account of carelessness and the lack of proper attention to the main irrigation ditches and to the lack of provision for the taking care of the storm waters which come down at the time of rains or the melting of the snow in the mountains, considerable areas are flooded. There are no overflow ditches or attempts of any kind to establish drains for the flooded lands, although this could be done at reasonable cost in many places. The result is a tremendous *Anopheles* breeding, among which the *Anopheles Albimanus* is the predominating species. The malaria rate in such districts is almost 100% and consequently labor is deficient and difficult to obtain. Plate II shows a lily pond, formed on account of the above mentioned conditions, where *Anopheles* breeding was found to be profuse. On account of these conditions,

the haciendas have found it difficult to induce the mountaineers to come down to the coast to work. The mountaineer has learned from the experience of his friends and relatives that to come to the coast means to contract malaria, which incapacitates for some time, if it does not kill with the first attack.

The Peruvian government has recognized the importance of combating the malaria problem and asked me to undertake a study of sanitary conditions with special reference to malaria. This survey was first undertaken in June, 1919, and plans were well under way for the undertaking on a practical basis when the news arrived in Lima (July, 1919) of the outbreak of yellow fever in the Department of Piura. The malaria work was then postponed and I was requested to take charge of the campaign for the eradication of the yellow fever. The yellow fever campaign was carried on as vigorously as possible during the months of July and August. Unfortunately, I, also, was stricken with the disease, and the work had to be turned over to the First Assistant, Dr. M. J. Quires, a native and a very good worker.

PLATE V



Indian section at Catacaos, with about 20,000 inhabitants living in this congested fashion and without any outhouses

In February, 1920, I resumed charge of the campaign and pushed it to the conclusion mentioned above. In the period from February to June, yellow fever appeared in the following towns and villages: Païta, Piura, Sullana, Catacaos, La Huaca, Tamarindo, Miraflores

(a plantation), Munuela, Sechura, Tambo Grande, Chulucanas, Morropon, and a number of smaller plantation villages.

In addition to the malaria problem and the yellow fever, there is a very grave problem in the prevalence of bubonic plague in all seaports and most of the principal interior towns and cities. The plague has an annual culmination of a serious epidemic in most of the principal towns of the country, which begins usually in the spring, in the month of September, and increases in virulence as the summer advances, reaching its climax in the late summer, February and March, and then gradually subsides again during the winter months, i. e., June to August. The cause of this seasonal prevalence is not explained, and, so far, I have had no time to make a study of it. My principal plague observations have been on the epidemic which existed in Paita while we were combating the yellow fever there. In Paita we had an epidemic of 130 cases with about 67% of deaths. We were unable to give much time to the study of the plague, on account of the extensive spread of yellow fever, and it was more important, from the standpoint of Peru, to stamp out the yellow fever than to give much of our time to the plague, which already had spread over the entire country.

Speaking generally, it seems more appropriate to speak of the *insanitary conditions* rather than the sanitary conditions, as so far I have seen no practical sanitary work carried on by purely Peruvian initiative, and all towns lack the necessary hygienic improvements. I have seen no city with even a fairly good water and sewerage system, nor with efficient garbage collection and destruction. (Plate III.) The unburned garbage

dumps which one encounters are veritable mounds as old as the cities and towns themselves. The fly breeding is a menace to all, but what makes this worse is that the poorer classes have no idea of the seriousness of polluting the soil, especially in any portion of the towns or cities where there is a tree or bit of a wall behind which they can assume that they are hidden while responding to the call of nature. This is often where the flies have a convenient, easy flight to the kitchen and dining room during meal time. Typhoid and intestinal disorders occur in practically all

PLATE VI



With houses so flimsy that, in fumigating for Stegomyia, it was necessary to enclose them in a canvas tent

households, and the infant mortality is staggering. It is said by some of the native writers that the death rate exceeds the birth rate. The birth rate is very high in all classes.

In some sections, such as the province of Lima, there is much tuberculosis. This is due to a number of causes, such as the miserable housing conditions, especially for the peones, who live in the crudest kind of huts, with neither light nor ventilation, in most instances. Plates IV to VI will serve to give an idea of health conditions that are common in the country.

The JOURNAL presents from time to time sketches of Sanitary Conditions in Foreign Countries. These are intended to outline the problems of Health Administration under conditions different from our own.

SOCIOLOGICAL BACKGROUND OF SANITATION WORK IN PERU

PHILIP AINSWORTH MEANS,

Lima, Peru.

SANITATION work, such as that being carried on in Peru by Dr.

Henry Hanson, under the auspices of the Peruvian government, inevitably has an important sociological aspect. The complex of conditions which it seeks to combat are largely the product of sociological factors, and the former can seldom be permanently corrected until the latter are most profoundly ameliorated. Therefore, in this article it will be my aim to show the chief features of the situation with which Dr. Hanson and his associate find themselves confronted.

Prior to 1531, Peru was the seat of the remarkable native civilization in which the Inca tribe of Cuzco was the moving force. The government set up by that tribe, which about 1400 became an imperialistic dynasty ruling over a very wide territory, containing a diversified population, was a despotism at once socialistic and theocratic in character. In spite of the nature of its structure, however, the rule of the hereditary governing caste at that time seems to have been benevolent, and there are many indications that the well-being of the people, so far as material things were concerned, was carefully assured. The upper class undoubtedly lived, not only with considerable splendor, but also with solid comfort as well, for we know enough of their domestic architecture, of their clothing and of their habits of personal cleanliness to be able to judge of this.

In 1531, the advent of Francisco Pizarro and his men quickly put a stop to this state of affairs and inaugurated the colonial period, which lasted until 1821, when independence from Spain was won.

The character of the Spanish Conquest was such that it very soon replaced the ancient homogeneity of the Peruvian population by a poly-racial character.

This was due to two facts. One was that the first Spaniards to arrive in Peru came without their womenfolk, and so readily married with, or mated with, native women, thus creating a class of people known as "mestizos," or mixed-bloods. The other fact was that negro slaves were brought to Peru by the Spaniards and there they, too, promptly mingled their blood with that of the natives. This process took place especially on the coast, for the negroes, being generally engaged in cultivating the sugar plantations, did not penetrate the highlands in great numbers. As time went on, the first of the facts here mentioned became modified, for it was a part of the policy of the Spanish government to encourage the wives of settlers to accompany their husbands to the colonies, and so it came about that numbers of Spanish women, often of the highest social class, did go to Peru, thus helping to found a small group of aristocratic families of pure Spanish blood.

In 1854, the racial situation was even further complicated by the introduction of Chinese laborers to work on the sugar plantations, in place of the negro slaves, who had lately been freed. As most of them came without womenfolk, they, too, added their blood to that of races already established in Peru.

This series of facts forms the historical background of the present racial situation of that country. The situation may now be briefly summed up thusly:

The lower classes of the coastal region are made up of Indians more or less deeply tinged with negro or Chinese blood. Here and there, due to local conditions of one sort or another, the native blood has been able to keep itself pure, or practically pure. In a few such places the ancient Indian languages have sur-

vived into modern times, but generally the language of the coast is Spanish, and, in some districts, the people seem to be far more negroid than native. The Chinese admixture tends to keep to the large towns, where it monopolizes certain occupations. In the mountains, the lower class are for the most part pure-blooded natives, preserving their ancient tongue, degenerated forms of their old-time customs and governed by a bastard descendant of their old social organization. There is in the highlands a somewhat higher class also, composed mainly of persons of mixed native and white blood. In Lima, where the highest class of Peruvian society has always been concentrated, one sees large numbers of pure-blooded or nearly pure-blooded negroes, descendants of the slaves who waited upon the colonial aristocracy. By the same token, the master-class, the pure-blooded white aristocracy itself, is also most strongly represented in Lima, though a few representatives of it can be found in any of the larger towns, as well. With the exception of the introduction of the Chinese, the racial composition of Peruvian society has not greatly altered since about 1600.

Though no accurate census of population has been made in Peru for several decades, the various racial elements of the Peruvian population may be given with approximate correctness:

- Pure, or nearly pure, natives.....45%
- Mixed native and white-blooded people (mestizos)25%
- Negroes and derivatives therefrom..20%
- Asiatics and derivatives therefrom.. 7%
- Whites, pure, or practically pure... 3%

The people to whom Dr. Hanson's article refers belong to the first four of these five classes. The three per cent, though represented in Piura by a small number of families, is not important from his point of view, for the reason that, in Piura or elsewhere, that class does not possess the traits which he describes. The three per cent, though in some ways they are the most important

class in Peru, can here be dismissed with a word by saying that most of them are perfectly sophisticated and modern-minded people who would not tolerate in their houses and on their persons the conditions referred to by Dr. Hanson.

A class which requires special comment here is that made up of mixed native and white-blooded people. Many of them have important political, social and economic positions. Yet, they are mostly out of touch with the modern world, on account of the exceedingly secluded and old-fashioned way in which they live. The old Spanish tradition with regard to household work, a tradition, no doubt, prevalent in ancient times among the natives as well, still strongly survives among them, causing them to regard the kitchen as an ignoble place which must exist, but which must be tucked away somewhere out of sight and which should never be inspected by the lady of the house. This, coupled with the incorrigible messiness of native servants, makes the kitchen all too frequently exactly what Dr. Hanson describes it to be. The lower classes, of course, have no specialized room for kitchen purposes, their huts being one-room affairs in which all the activities of the family and its livestock are carried on in close proximity to one another.

In fact, the habitations of the lower classes in rural Peru can hardly be described as houses at all. On the coast, the native element, including that portion of it tinged with negro blood, lives in miserable hovels made of old corn-stalks, gasoline-cans flattened out and nailed against a rickety framework of half rotten bamboos, in which bubonic-bearing rats can hide, and a miscellaneous collection of old clothes and all sorts of rubbish. (Plate I.) In the highlands, the houses of the native element are made of uncut stones laid in mud. They have very low roofs, composed of bad thatch, in which vermin abound. The door is usually the only opening, and the intense cold at night causes the family

and its animals to huddle together in one heap of filth and stenching misery. In both regions, there is an abounding lack of washing facilities, and if we remember that there is also a strong tendency to pile garbage and other refuse at the very door of hut, where buzzards and scavenger-dogs pick it over at their leisure, it will easily be seen by the reader that conditions are exceedingly bad.

This situation, combined with the utterable dullness of the lives of these people, a dullness which the debased ceremonies of a paganized church may vary but does not ameliorate, not unnaturally drives the people to an excessive use of bad liquor and a great over-indulgence in other harmful practices. In the mountains, the ravages of alcoholism are far worse than on the coast. This is partly due to the great coldness of the highlands and partly to the fact that the liquor vendors of the coast towns are not allowed to sell their goods on Saturdays, Sundays and feast-days, a prohibition which is fairly well enforced in many districts.

The traditional attitude of the Spanish toward country life and its attendant responsibilities and pleasures has made itself strongly felt in Peru. A family of high position, though its wealth were based on the possession of land, regards life on that land as an exiling and a martyrdom. For that reason, there has never been in Spanish America any approach to that development of country-house architecture and country-house life which has had so beneficial an effect upon English society, as well as upon our own, especially in New England. If a rich Peruvian family of colonial and even of modern times finds it unavoidable to live near the family estates, they build a palace, often very beautiful, in the nearest city. Only in very recent decades have fine country houses begun to be built in Peru.

This brings me to the final aspect of the question in hand. The soil in Peru is almost all held in estates, called "fin-

cas" or "haciendas." Some are of moderate dimensions, some are larger, and a few are of tremendous territorial size. On these haciendas one always finds a "mansion," often a calamitous structure enough, where either the owner or his steward lives. There is always at least one village for the tenant-laborers and their families. It is in these villages that houses of the sort already described are found. Round about are the fields of the hacienda. All too often the social and material conditions prevailing on such an estate are exceedingly bad. In a few cases the proprietor and his family, belonging to the three per cent, dwell on their land a good part of the year, and have built a good house for themselves, as well as better dwellings for the tenants. But generally the proprietor prefers to live in Lima or some other large city and to leave his property to the tender mercies of his "administra-



Living in miserable hovels made of old cornstalks and gasoline-cans flattened out and nailed against a rickety framework of half-rotten bamboos.

dor." The tenants on an estate thus treated are usually in a pitiful condition.

But in spite of all the terrible things one may see in rural Peru, it is quite clear to those who really know that the people of all parts of the country are distinctly betterable. Their chief foes are alcoholism, insanitary conditions provoking constant ill-health, bad working conditions and an absolute lack of wholesome and agreeable amusements. Every one of these foes could be permanently vanquished if the landowners chose to do

so. A proof of this exists in the fact that here and there about Peru landowners, sometimes Peruvian individuals or companies, sometimes foreigners, have deliberately set about the establishment of proper conditions. One gentleman whom I know, a Peruvian, has instituted on his lands, which are very large, a set of conditions which are ideal. Careful inquiry reveals the fact that his people are happy, strong and productive of much good work in the fields and sugar mills of his estate. They make full use of the playgrounds, cinemas, schools, bathing establishments and good dwellings provided for them.

What Peru needs more than anything else is the creation of a proper attitude on the part of the landowning class toward the responsibilities of owning land with many tenants upon it. But how the Peruvian uppermost class is to be induced to shake off its inertia and its pessimism is something difficult to imagine. Peru at present lacks a public opinion in these matters, and the landowning aristocracy recognizes no such responsibilities as those to which the

analogous class in England have always lived up to. This is the crux of the whole matter, for, until some means for overcoming the present condition and of doing so in every part of the country is found, nothing far reaching and permanent can be accomplished. Probably the best way to carry out the necessary reforms will be to induce the Peruvian government to support for a time an experimental hacienda, where all sorts of social, agrarian and hygienic reforms can be tangibly demonstrated to be feasible. Once this has been done, a body of laws based upon the experiences thus gained could be drawn up obliging all landowners to conduct their estates in accordance with the new principles. At the same time, the loneliness and dullness of country life should be done away with for the upper class by the construction of roads and social centers, such as country clubs, permitting the chief families of a given district to enjoy the society of their friends and neighbors. This can be done, and, sooner or later, it will have to be done, or else Peru will relapse into a frightful condition.



Indian Red Cross Lectures.—The Red Cross public health program, as well as the general purposes of the society, is being explained in lectures in the Sioux language to Indians in Minnesota, among whom there is much tuberculosis. Old Two Hawks is an eloquent lecturer for the Red Cross. One squaw, who has never before appeared in public, prefaces her carefully prepared speech with the statement that if her audience were not composed of ladies and gentlemen she would not talk to them.—(*J. A. T.*)

X-Ray Movie.—Combining in a single apparatus the moving picture camera and the X-ray machine, two French scientists, Drs. Lormon and Comandon have worked out a "radiocinematograph" which makes possible movies of the interior functioning of living organisms.

Medical experts attached to the American Red Cross Commission to Europe are already considering its application to special problems raised by the unprecedented epidemics now sweeping central and eastern Europe.

NOTES ON BACT. COLI AND BACT. AEROGENES

MAX LEVINE,

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State University of Iowa.*

Iowa City, Iowa.

Read before Laboratory Section, American Public Health Association, at San Francisco, Cal.,
September 16, 1920.

Accurate information on the relative incidence of *Bact. coli* and *Bact. aërogenes* in nature would aid materially in the interpretation of the colon test in water analysis. Professor Levine suggests the lines along which selective media, for the isolation of these organisms, may be devised.

IN studies on the distribution of *B. coli* and *B. aërogenes*, the author has given preference to the plate method of isolation. This, also, seems to be the view of most other investigators who have concerned themselves with similar studies. In water analysis, on the other hand, the plate method of direct isolation is inconvenient and practically impossible when dealing with large samples (10 to 100 cc.), and preliminary enrichment, therefore, is resorted to. What happens in the preliminary enrichment tube as to the relative abundance of *B. coli* and *B. aërogenes*, is not definitely known as far as the author is aware. Overgrowths of one or the other of these organisms in the preliminary enrichment tube make it extremely difficult, if not impossible, to correlate the water results with the findings that have been reported (with the plate method) on the distribution of *B. coli* and *B. aërogenes* in nature.

The author has felt for some time that before much light will be thrown on the true relative incidence of *B. coli* and *B. aërogenes* in water and in feces, etc., it will be necessary first, so to modify our preliminary enrichment media, or other conditions, as to enable the investigator to isolate or suppress either *B. coli* or *B. aërogenes* at will.

With this in mind, studies were begun to determine the influence of various

factors such as dyes, bile-salts, concentration of peptone, etc., on the rate of multiplication of *B. coli*. In general, it was found—

(1) That *B. coli* would not grow in $\frac{1}{2}$ percent peptone with crystal violet in a dilution of 1-200,000, or brilliant green in a dilution of 1-1,000,000.

(2) That bile-salts stimulated the growth of *B. coli* when the concentration was less than 0.5 percent, but showed a marked inhibitory action if the concentration were raised to 0.7 or 1.0 percent. It was intended to continue this work with *B. aërogenes*, but the outbreak of the war interfered with the plans. The following factors are now being studied as to their influence on the growth of *B. coli* and *B. aërogenes*.

1. Temperature.
2. Boric acid.
3. Crystal violet.
4. Brilliant green.

Temperature.—That *B. coli* and *B. aërogenes* have different optimum growth temperatures may be inferred from the literature. Rogers and his associates have often mentioned the necessity for using a relatively low temperature (30° C.) for growth of some strains of *B. aërogenes* isolated from grains. Similarly Rettger reports that in studying the distribution of the colon group in unpolluted soils a temperature of 30° C.

was desirable for isolation of the *B. aërogenes* types.

As to *B. coli*, a temperature of 40° C. has often been recommended for its isolation and in the Eijkman test 46° C. is employed for the isolation of the organism from water. In fact, it has been observed that the maximum rate of multiplication of *B. coli* is at about 45° C.

The author observed that in peptone lactose media at 43° C. (in a water bath) all the cultures of *B. coli* (16) grew luxuriantly as evidenced by strong turbidity in 24 hours, but 69 percent showed no gas or only a bubble in 24 hours. Of 20 cultures of *B. aërogenes*, on the other hand, 16 showed no growth, 2 slight, and 2 grew luxuriantly.

Boric Acid.—In agar of the following composition: peptone 1.0 percent, agar 1.5 percent, dipotassium phosphate 0.3 percent, and glucose .05 percent with 0.63 percent of boric acid, *B. aërogenes* failed to grow, whereas *B. coli* grew luxuriantly. In liquid media, 1.0 percent peptone with 0.63 percent boric acid, *B. coli* multiplied slowly, while *B. aërogenes* died off as evidenced by the following figures:

Culture 19b, *B. coli* increased from 65,000 per c.c. to 1,500,000 per c.c. in 48 hours, while *B. aërogenes* was reduced from 2,300 per cc. to 20 in 24 hours and to 0 in 48 hours. It was found in subsequent studies, however, that the difference in concentration of boric acid, which did not inhibit *B. coli* and which did inhibit *B. aërogenes*, was so close that it could not be safely employed as a selective agent.

Crystal Violet.—One percent peptone water containing $\frac{1}{2}$ percent lactose and varying concentrations of crystal violet were inoculated from 48-hour peptone cultures of *B. coli* and *B. aërogenes*. Five different strains of each species were employed. A concentration of 1-100,000 of crystal violet prevented the growth of all the cultures of *B. coli*, whereas all of the *B. aërogenes* grew heavily. One culture of *B. coli* failed to

grow in a dilution of 1-250,000 of crystal violet.

Decreasing the concentration of peptone to $\frac{1}{2}$ percent increased markedly the inhibitory action of the dye. Thus in $\frac{1}{2}$ percent peptone lactose solution none of the *B. aërogenes* grew with a dye concentration of 1-100,000, but all grew luxuriantly in 1-250,000 crystal violet. Among the *B. coli* cultures, all were inhibited in 1-250,000 dilution of the dye and two failed to grow in a dilution of 1-500,000.

Brilliant Green.—Some time ago, the author was informed that growths of *B. coli* are rarely encountered in the isolation of *B. typhosus* from stools by the use of eosine brilliant green agar, and that if a growth other than *B. typhosus* was present, it was very likely to be *B. aërogenes*. This suggested that the inhibitory action of brilliant green was much greater for *B. coli* than for *B. aërogenes*.

In a medium consisting of 1.0 percent peptone and 0.5 percent lactose with various concentrations of brilliant green, four cultures of *B. aërogenes* grew very luxuriantly in a concentration of 1-750,000, whereas one failed to grow in this concentration, but grew very well in 1-1,000,000 dilution of the dye. The 5 cultures of *B. coli*, on the other hand, all failed to grow in 1-750,000 of the dye, 3 did not grow in a dilution of 1-1,000,000 and 2 failed to grow even in a dilution of 1-1,500,000.

Reducing the concentration of peptone to $\frac{1}{2}$ percent increased very markedly the antiseptic action of brilliant green. The five *B. coli* cultures now failed to grow even in a dilution of 1-3,000,000. The *B. aërogenes* cultures grew luxuriantly in a dilution of 1-2,000,000. Four grew in a dilution of 1-1,500,000, but only 1 grew in more concentrated solutions of the dye.

The selective action of brilliant green was even more strikingly shown by the use of a plate medium consisting of the simplified eosine methylene blue agar

with various concentrations of the brilliant green. Four cultures of *B. aërogenes* and five of *B. coli* were employed with the following results:

With a dilution of 1-100,000 of brilliant green, none of the *B. coli* grew at all. All of the *B. aërogenes* grew, but the colonies were only half as large as the controls indicating a marked inhibition. With 1-200,000 dilution, *B. coli* still failed to grow whereas *B. aërogenes* grew reasonably well, but not as luxuriantly as the controls. With 1-300,000 of the dye, three of the *B. coli* still failed to show any evidence of growth and two others grew very poorly. All the *aërogenes* showed a very heavy growth. With

1-400,000 brilliant green, the growths of *B. aërogenes* were as luxuriant as the controls, whereas 2 cultures of *B. coli* failed to grow and the three others showed very small, stunted non-characteristic colonies.

In conclusion, it may be said that these preliminary studies indicate that the concentration of peptone exerts a marked influence on the inhibitory action of dyes in culture media, and that it appears feasible to devise both liquid and solid media which will inhibit *B. coli*, but not *B. aërogenes*. The most promising inhibitory agent which we have as yet encountered for this purpose is brilliant green.



MAINTAINING STANDARDS OF ANIMAL FOODS

M. E. JAFFA,

*Professor of Nutrition, University of California,
Berkeley, Cal.*

Address of Chairman before Food and Drugs Section, American Public Health Association, at San Francisco, Cal., September 13, 1920.

I will take advantage of this opportunity to present one or two matters, which to me are fundamental to the application to every-day life, of the results of scientific nutritional studies. Such data have little value if they cannot be successfully and practically used in rational feeding, whether for man or other animals.

We are all interested in foods, some in drugs, but at all events we are all interested in the maintenance of high standards of purity of foods and drugs. It is to the maintenance of such standards with special reference to the stock feeds that I wish to devote a few moments. The food supply of man is, thanks to the efforts of the national and state bureaus of food and drugs, quite satisfactorily safeguarded. Cattle and poultry foods, however, require more attention and will continue to do so until the subject is as well covered as that of human foods.

At present our best authority for standards for cattle and poultry feeds are the definitions adopted by the Association of Feed Control Officials of the United States. These were originally adopted nine years ago, but changes or modifications have been made at every succeeding annual convention.

We should encourage and welcome any and every addition, change, or modification which would tend to raise standards; but should, on the other hand, deprecate in no unmeasured terms modifications of any definitions which would directly or indirectly allow the marketing of a lower grade product than that called for by the original definition. Let me offer two examples illustrating both phases of the subject. The present definition for alfalfa meal reads:

"Alfalfa meal is the entire alfalfa hay ground, and does not contain an admix-

ture of ground alfalfa straw or other foreign materials."

This definition is good as far as it goes, but we have no definition for alfalfa hay. If all alfalfa fields were clean and the curing and baling of alfalfa hay required no particular care, then there would be no call for a definition of alfalfa hay; but all alfalfa fields are not free from weeds or grasses and too often one finds on the market hay sold as alfalfa hay which is far from meeting the requirements of the high grade article, in that there is too much stalk and too little leaf, also an appreciable quantity of foreign materials. It would, therefore, appear that a definition of alfalfa hay will be very timely in order properly to safeguard for the feeder the purity and quality of this most valuable feed stuff—valuable not only for its leaf protein, but also on account of its content of vitamins and mineral matter.

The question might well be asked: "Are any changes or modifications of definitions ever suggested which would directly or indirectly allow of the manufacture or sale of lower grade products than those represented by the unmodified definition?" Unfortunately the answer to this question must be in the affirmative and is well exemplified by the present situation with reference to rice products. There are three of these included in the present definitions, rice hulls, rice bran, rice polish. The food value of rice hulls is exceedingly low and, in my opinion, it should never be offered as a food, either as such or in any mixture. Rice bran is one of our most valuable dairy, stock and poultry foods and its purity and quality should be protected in every possible way. The present definition for rice bran is short, concise and complete, it reads:

"Rice bran is the cuticle beneath the hull."

There should be, in the opinion of those most interested in upholding high stand-

ards, no change in this definition. There is no just or sufficient reason for any modification, but unfortunately we find in the tentative definitions which were proposed at the 1919 convention and will be acted upon at the coming convention, a modification for the definition of rice bran reading:

"Rice bran is the cuticle of the rice grain, with only such quantity of hull fragments as is unavoidable in the regular milling of rice."

The proposed change may appear to some as unimportant and not worth time and discussion. On the other hand, if such a definition were to be adopted then there would have to be defined "unavoidable" and that is where the trouble lies. The new definition would, it seems to me, open the door and open it wide to the lowering of the net energy value of rice bran in that it would include an appreciable percentage of hulls, and unfortunately legally so, which at present is not possible.

It goes without saying that after the paddy or rough rice is hulled it should be a simple matter for the miller to fan out all the remaining rice hull, leaving a clean grain from which the bran is removed. The presence of hull in the bran would, therefore, appear to have no justification and consequently there should be no change in the designation of rice bran.

At every annual convention of the A. F. C. O., as previously stated, proposed changes to existing definitions are offered. These changes are not adopted or rejected at the time of their introduction, but are printed in the proceedings as "tentative definitions" and at the following annual convention these tentative definitions are discussed, and either adopted or rejected. It is to be hoped, therefore, that at the coming convention of the Association of Food Control Officials that this proposed change in the definition of rice bran will be rejected.

SYMPOSIUM ON NARCOTIC DRUG ADDICTION

I. THE HELPLESS NARCOTIC; A PUBLIC MENACE AND A PUBLIC HEALTH RESPONSIBILITY

HONORABLE SARA GRAHAM-MULHALL,

First Deputy Commissioner, State of New York Department of Narcotic Drug Control, New York City.

Read before joint meeting of Laboratory, Public Health Administration and Food and Drug Sections, American Public Health Association, at San Francisco, Cal., September 14, 1920.

AT the request of the officers of the American Public Health Association I have prepared this paper and have undertaken to suggest for discussion a most neglected form of slavery. I have divided my topic into three general heads:

1. The Helpless Narcotic.
2. The Narcotic a Menace.
3. The Narcotic a Public Health Responsibility.

Why is the narcotic addict helpless? The overwhelming reason is that he cannot help himself. Narcotic addiction is not like the habit of drinking alcoholic beverages. An habitual drunkard can, if he will, make a sudden determination and quit his habit forever; a misfortune or accident may stun him into sense and resolution. There are many instances of complete conversion, followed by immediate and lasting abstinence.

But the drug addict never does rid himself of his habit alone, by force of determination or will. No misfortune or hope of reward is sufficiently deterrent.

One of the most potent factors in making and keeping the narcotic addict helpless is the so-called ambulatory method of treatment by which he is at liberty to go from physician to physician, from drug store to drug store, from peddler to peddler. This ambulatory method is merely a means of satisfying his abnormal craving and it leaves the patient no better off than when he began. The physicians he usually employs regard him merely as a prescription buyer, and they deal out his script to him automatically. He is under no control. He undergoes no periodic examination, there is no urge for him to seek a cure. He is practically

seduced by the ambulatory method into becoming a hopeless addict for life. The general public, the police and the jailers, in their ignorance of drug addiction, fail to understand why the narcotic addict cannot by merely willing it be freed from his habit. Acting upon the mistaken theory that he could, if he would, the unfortunate addict has been arrested, thrown into jails all over the country and compelled to suffer it out. Two narcotic addicts on the same day in the Tombs prison, in New York this summer, committed suicide by waiting their chance and throwing themselves to the street below, so intense were their sufferings. Others have torn up their bedding and beaten their heads against the jail wall, the jail authorities looking on without the slightest conception of why the addict cannot save himself. The ignorance of these officials is what might be expected, as neither they nor the general public have been educated on the subject of addiction. There has been no effectively carried out concerted effort by public health officials to enlighten the public as to the nature of drug addiction, and its proper treatment. There have been only sporadic attempts at explaining the subject through articles by individual physicians, and in the history of medicine there has been previously but one or two conferences where there was a session devoted to probing the narcotic situation. The medical profession, as a profession, has not considered narcotic addiction seriously, this aloofness leading to error on the part of the public and to unmerited suffering by the addicted. No constructive national program has been

presented, repressive laws being the only national achievement thus far, in this field.

Helpless to cure himself, helpless when he places himself under the "script"—only—giving doctor, and helpless and uncared for when he falls into the hands of the law; a more despised, misunderstood and unscientifically handled class does not exist.

WHY IS THE NARCOTIC ADDICT A MENACE?

Addiction is distinctly a social disease which spreads like a pestilence through groups. New York has the bad eminence of being the narcotic plague spot of the country and a survey of conditions here gives a more comprehensive revelation than can be secured elsewhere. Here it is that the illegal vendors—the class which introduced heroin—find their most profitable market. And it was here that the federal authorities struck first.

The narcotic addict is a more dangerous source of contamination than was the convivial man in the days before prohibition. In one evening in a pool-room, he can and does, corrupt scores among the group. To evade the law against the possession of hypodermic syringes, many addicts substitute improvised hypos, consisting of a safety pin and a glass dropper. These facilitate giving "shots," as they are called, to the group.

Physicians and nurses who become addicts are even more capable of corrupting individuals and groups than is the layman, as their greater knowledge of drug addiction gives them larger powers for evil. For example, there is the case of a woman who had been assistant head nurse for a number of years in a large New York hospital. When her apartment was recently raided, more than 4,000 names and addresses of men and women were found, collected for the sinister purpose of distributing them to illegal sellers. She also had large quantities of boxes, such as are used to dispense narcotic drugs, these being properly labeled with the name of a druggist.

They were held in readiness to be filled by illegal vendors and dispensed to the patrons of the nurse who came to her without doctors' prescriptions.

Especially does the pernicious activity of the narcotic drug tempter make an impression upon the new release from the habit. Hospital cases, hardly any of whom feel really strong, are offered the drug, free for the first time or two, until the sinister aim of his tempter is accomplished, by the re-establishment of the habit. Very persistent always are the efforts made to tempt the hospital release. The cured addict in a neighborhood is a most undesirable object lesson, from the vendor's point of view; besides which it is a curious fact that a certain hostility is felt by those still with the habit toward those who have reformed, and efforts to break down the morale of the hospital release are entered into with zest by his old associates. Doctor Thomas F. Joyce, resident physician at Riverside Hospital, New York, informed the department that 90 per cent of the 2,600 releases from this hospital went back to the drug within a few days after returning to their old environment.

Another angle of the addict menace is that the free masonry which exists among addicts takes a dangerous turn when it involves, as it frequently does, in certain circles, the passing around of the hypodermic needle for the administration of the drug, this practice resulting in infection. The insanitary habits of the drug user often develop more or less malignant ulcers, at the point of contact between the flesh and the needle, which he usually is not careful thoroughly to cleanse. The discharges from the ulcers are taken along with the drug into the systems of those who use the "community needle"; and more perilous still is it that those afflicted with syphilis—and clinical investigation proves that a large percentage of addicts are thus affected—transmit this loathsome disease to those who use their hypos. The syphilitic narcotic addict is permitted, through

the relief from pain afforded him by drugs, to pursue his calling which includes many forms of activity that bring him into more or less close contact with men, women and children. A recent instance is that in a moderate-priced restaurant on a busy thoroughfare, a waiter whose hands were covered with syphilitic sores was handling rolls and other foods. The patrons, unaware of the danger of contagion, were accepting his ministrations without protest.

In taking histories for the purpose of registering the addicts, many of them give driving as their occupation. A number are taxi-cab drivers, a majority, however, being employed by express companies. These men in the course of their activities, give change, hand women and children in and out of taxis, and manipulate hand baggage as well as trunks. As already stated, investigation has shown that a considerable percentage of narcotic addicts are syphilitic; and, having what in the aggregate must be a large number of syphilitic addicts in daily close contact with the people of a community, is a grave menace. If the drug were denied this class of addicts they would be unable to work because of their intense sufferings and they would then be compelled to submit for treatment for this disease. As conditions are now, these disease carriers are freely circulating in the community.

Another phase of the narcotic addict menace is the frustration of the purposes of nature, the most alarming manifestation from the sociological viewpoint being that he reduces himself to impotence and she becomes sterile. As the average age of the addict class in the community is 24 years, it can be truly stated that race suicide is coincident with narcotic addiction. Can there be a greater menace to a nation? This is a blow at its very existence as a people.

Another result of narcotic addiction which is a matter of grave national concern, when as in this age our country must compete with the most aggressively

progressive nations of Europe is that, even under the best possible conditions of regular living, carefully balanced amount of drug, and honorable employment, the narcotic addict is never at his best, mentally, spiritually or physically, always not as virile as he should be, his mind not normally clear. A disquieting fact in this connection is that many of these below-normal persons hold important positions requiring perception, initiative, discretion and energy, qualities which must be at their keenest to be effective. What a national handicap is this class, comprising no one knows how many hundreds of thousands, in the struggle for national progress and achievement.

Fear dominates the narcotic addict. Indeed his fear of any untoward circumstance preventing his getting his drug supply at the usual time amounts to an obsession. Whatever his station in life, fear always lurks in the back of his mind. If he need have no concern on the financial side, he dreads the possibility of new regulations that may intervene between him and the drug of his addiction. If what he considers a catastrophe does occur and he cannot in consequence secure his supply as usual, he schemes to get the drug, and honor, family tradition, self-respect, all go by the board if need be, for the sake of the drug. When the addict is in straightened circumstances, if driven to the wall financially, he will steal, or commit other crimes to secure the purchase money for his drug. It may seem a cruel statement, but it is essentially a fact that the narcotic addict is potentially a criminal.

WHY IS THE NARCOTIC ADDICT A PUBLIC HEALTH RESPONSIBILITY?

"The habitual use of cocaine, opium or its derivatives, is hereby declared to be dangerous to the public health and safety, 436 Public Health Law, New York State." The law further authorizes magistrates and the New York State Department of Narcotic Drug Control to

commit an habitual user on his own application, and the power is extended to local health boards or health officers.

The federal government, the states and the municipalities have conferred upon boards of health amazingly great power over the lives and the health of the people. In emergencies, the boards of health set aside laws with impunity. At all times the methods of treatment for disease that they prescribe are compulsory, however vigorously a minority may protest against them. These autocratic powers are given to boards of health for the clearly defined purpose of safeguarding the public against whatever menaces its well being.

Have the health officials met this responsibility? In 1919 Commissioner Roper published the report of a special narcotic committee as to the drug situation, and in a foreword he made the statement that the report was presented to the public in the hope that it "will enlist the interest and coöperation of all official and social agencies in working out the best program for effective administration of the antinarcotic laws and for the rebuilding of these unfortunate persons afflicted with the narcotic habit, to the end that our man power may be properly protected from this growing evil. Individuals and organizations are urged to furnish information regarding insanitary conditions in their respective communities and to submit suggestions for the federal enforcement of the law." How many public health officials answered this appeal of an energetic and far-seeing federal official? What is the record of the stewardship of these health officials regarding narcotic drugs? For scores of years, boards of health permitted the unrestricted sale of narcotic drugs, pure and in compounds. Patent medicines, even those intended for administration to infants, containing a heavy percentage of narcotic drugs, were freely sold. One conspicuous soda fountain favorite, heavily drugged, was allowed to attain immense sales year after

year, when South American countries denied it entry. A questionnaire sent out to ascertain the extent of the use of cocaine in the South, received among its replies, some from teachers, who stated that many school children had become cocaine users through soft drinks in which the refuse from factories where the cocaine is extracted from the coca leaves was used, this refuse being sold to druggists. As there is no certainty that the cocaine is thoroughly extracted from all the leaves, the possibility is great of cocaine being mixed with the drinks. These concoctions were advertised in Sunday-school papers, and no one raised any objection to the booths and fountains dispensing them. It never occurred apparently, to any municipal authorities, to investigate this connection between the factories and the druggists to ascertain if there were any rigid requirements as to cocaine elimination processes in the factories. Boards of health acquiesced in this wholesale orgy of drug appetite stimulation.

Neither municipal nor state authorities appeared to have considered it as part of their duty to warn the public as to the dangers of opium smoking. For example, when that form of narcotic poisoning was popular, opium smoking in larger cities attained the proportions of a public health menace, but it was the police department and not the boards of health which smashed the opium dens. It may be contended that it is not the province of the board of health to raid, but it is accepted by these officials that it is their duty to warn the public and educate it as to the peril of plagues, disease, and health menacing conditions. This, boards of health have done, as witness the war on rats, the war on flies, the publicity given to the tuberculosis peril and the recent agitation about smallpox. The answer offered in explanation of this indifference to the narcotic evil may be that the boards of health had no appropriation for an educational crusade against it. Did they ever ask for funds

for this purpose? They showed no diffidence in requesting, even urging appropriations to warn against and fight other menaces. Why have they neglected so serious a condition as the narcotic menace? Opium smoking, heroin sniffing, and the use of the hypodermic syringe, are health concerns quite as much so as the bubonic plague. Why was not the general public warned against these habit-forming evils and the extent of their peril published in bulletins? Consistent with the public health officials' indifference to narcotics, is their treatment of heroin addiction. For eight years this has flourished without protest from public health officials who could have campaigned against it. It is admittedly a most pernicious drug, insidious and with a grip that its victims find hard to shake off, and yet its ravages have been ignored by health boards.

The erstwhile opium smokers found morphine even when taken hypodermically too tame, and heroin speedily became the drug of their addiction. Its use spread like an epidemic. Newsboys sold it on the streets and they have been seen in Times Square, New York City, sniffing it. The deadly quality of heroin aroused, not the boards of health, but a few physicians in private practice and the New York State Department of Narcotic Drug Control officials.

In 1919 Surgeon General Blue of the Public Health Service was approached on the subject of banning heroin and, as a result, he issued an order forbidding the dispensing of it in the Public Health Service stations. This order, the Surgeon General intended to follow up with an educational campaign against the drug, but the campaign was never organized. What influence paralyzed his purpose? It was eminently fit that the Public Health Service should take up this matter, as it was organized to lead in movements for the health of the people. But this beginning of ridding the country of the most baneful drug was largely abortive, because the most im-

portant feature, the educational campaign which would have attracted country-wide attention coming from the Public Health Service, was abandoned. This was the logical service to lead and inspire.

Although 90 per cent of the registered addicts are the slaves of heroin, and its evil effects are perfectly well known in medical circles, in spite of the ravages of this devastating drug, the health officials with few exceptions, ignore the menace. Is it no concern of health officials that over 500,000 pounds of opium enters the United States each year of which but 50,000 pounds, according to medical experts, are needed for medical use or purposes? Over 1,000,000 pounds of coca leaves are imported into this country every year and but 25 per cent of the cocaine derived from these coca leaves is legitimately used in medical, dental and surgical practice. Is it the duty of custodians of public health to find out what becomes of the residue, 450,000 pounds of opium, and 750,000 pounds of coca leaves?

JAILS VERSUS HOSPITALS

Judges on the bench and students of sociology are agreed that association with law breakers in prison is demoralizing and that few who are exposed to its corrupting influence escape contamination.

The youthful addict is arrested for illegal possession, and he is later thrown into jail where his fellow inmates are men with criminal records ranging from burglary to crimes of extreme violence. The truth of the Biblical statement that "evil communications corrupt good manners" — good morals being implied — is nowhere more cruelly exemplified than in prison. Doubly damned is the jailed addict, for not alone is he afflicted with a habit, but he is forced into personal association with more or less degenerate criminals. He enters the prison a narcotic addict and comes out of it with the ideals of his prison associates. Are the courts and the acquiescing public justified because a youth has the narcotic

habit, in forcing him to run the risk of moral contamination and of becoming a repeater?

Investigation shows that of all forms of reformation or even of crime prevention, the prison is the least successful; for example, the records of Sing-Sing reveal that 66 per cent of its inmates are recidivists.

A lesson against the indiscriminate jailing of addicts was furnished by an occurrence in a Southern city in 1919, and one that resulted in an important order affecting the Harrison Act. Federal officials in raiding several physicians and druggists in the city, cast a number of addicts into jail, as the hospitals refused to take them. So serious was the effect upon the addicts and the local public, that rioting followed this wholesale incarceration—crimes were committed and there were some deaths. When the news of the results of the jailing reached Washington, the commissioner of internal revenue sent out the following order modifying the interpretation of the Harrison law.

"July 31, 1919. The enforcement of the Harrison Narcotic Law, as amended by the Revenue Act of 1918 in the light of the recent decisions of the Supreme Court of the United States, has produced a condition with regard to the treatment and care of narcotic addicts that calls for exceptionally careful and rational handling. The vigorous enforcement of this law must be carried out in such a manner as not to produce any unwarranted suffering on the part of the addicts."

HOSPITALS VERSUS JAILS

Indiscriminate jailing is a failure both as it affects the narcotic addict individually and in relation to the elimination of the evil itself. The alternative is hospitalization, the only method which offers hope for the permanent rehabilitation of the addict.

Scientific study of the subject of addiction shows that the enormity of the problem requires federal as well as state

aid to put an end to what is a national disgrace as well as a scourge. We look askance at those nations of Europe not noted for personal cleanliness which are afflicted with typhus as a result; but we are equally disgraced for allowing our young men and women to be dragged down by a degrading habit without vigorously setting to work as a nation to save them and the honor of our country as well. It is infamous that we not alone fail to save our young people, but that we are exporting to a considerable amount, heroin to China to spread among that inoffensive people this debasing heroin habit to replace the far less dangerous vice of opium. Heroin has been declared by medical authorities "to be both baneful and unnecessary." (Cushny, *Opium Series*.)

It is not too late to begin reformation of the threatening conditions and the initial step is the hospitalization of the addict, this to include taking him off the drug by a uniform scientific method. It is essential that the narcotic addict should cease to be an experimental subject for every new formula that the medical brain conceives. The government should use its healing power and its educational power, as well as its police power in removing this national scourge.

A carefully prepared bill embodying recommendations in detail and known as the France bill was introduced in 1919 in the Senate by Senator France, himself a physician, and in the House as well, it being sponsored by a group of disinterested physicians and state officials under the supervision of the Secretary of the Treasury. In this bill it was pointed out that by the passage of the Harrison Anti-Narcotic Act, the Federal government recognized that narcotic addiction is a national problem, and that through this Act the Federal government took the lead in prevention. In the France bill it was recommended that the United States, through the Public Health Service, should furnish the education, hospitalization, and leadership which are

necessary. The bill provided that it aid the states with money where it is needed.

Should such a bill become law, a great campaign of education ought to accompany a vigorous campaign of enforcement. The officers of the Public Health Service would coöperate with those of the Internal Revenue, so that when the agents of the Revenue Service enter a locality to arrest commercial physicians and druggists, and close up avenues of illicit trafficking, the Public Health Service will enter with means for caring for the frightened addicts, and to quiet the panic which will result.

American communities advised, and to some extent aided in money by the Public Health Service, can be depended upon to mobilize in their own localities physicians and nurses necessary to meet the emergency. This nation-wide campaign of education and enforcement of the law will have far-reaching effects. The people of the country in this way will learn, not alone the extent of the evil and the means of treating its victims, but they will also be aroused to demand whatever further measures experience may show to be necessary for the suppression of the drug evil. Unlike many other public dangers, it can be quickly and effectively banished by a short sharp fight.

RECOMMENDATIONS

My first recommendation has been made before, but it is sufficiently vital to bear repetition.

Recommendation 1.—A uniform and nation-wide statute should be adopted under a new amendment of the Constitution, giving Congress power to stamp out the drug evil in the whole country. Such a terrible curse cannot be successfully fought through slow-moving states, passing inconsistent and in many cases ineffective statutes.

Recommendation 2.—A federal hospitalization bill, similar to the France bill, which authorized the Public Health Service to aid the states with money where it is needed. The bill provided for an appropriation for the Public Health Service

and authorized the service to spend 20 per cent of the appropriation in each year for its educational campaign, and for the administration of the Act; and to use the balance to aid the states, on a dollar for dollar basis in the treatment of addiction. No permanent appropriation will, however, be needed. After a period of not more than two years, the worst of the narcotic evil should have passed and the states be able to carry the load of the problem themselves without government aid.

Recommendation 3.—Wherever possible, a colony should be established in connection with the federal hospitalization system. Here there should be a thorough application made of the methods of hospital, convalescent home, industrial community, and vocational training school. The organization of this colony division should be in the hands of a supervising medical board, medical specialists on mental diseases, experts on occupational therapy and recreational leaders. The prolonged after-care of the narcotic sufferer, away from the old environment with its constant incitement to relapse, shows that his ultimate welfare can best be served by the colony plan, which includes the hospital. This is not a theoretical suggestion, but precedent is found for it in New York state, famous for such institutions as the Craig Colony for Epileptics and Letchworth Village.

Recommendation 4.—Tax heroin out of existence and forbid its importation into this country.

Recommendation 5.—Further restriction in the manufacture of habit-forming drugs by requiring those seeking to be registered or licensed as manufacturers, to satisfy the Commissioner of Internal Revenue, that they are fit persons to hold the privilege—a careful investigation of these applicants to be made in each case. (Compare section 247 and 247A Boylan Law.)

Recommendation 6.—Require any person manufacturing a derivative of opium or coca leaves to keep a record

of the derivative and the quantity manufactured, and file a copy thereof with the Commissioner of Internal Revenue immediately upon its manufacture, this for

the purpose of tracing more thoroughly the distribution of narcotics in the course of their manufacture. (Compare Boylan Law, Section 248.)



SYMPOSIUM ON NARCOTIC DRUG ADDICTION

II. SOME RECENT EXPERIMENTS IN NARCOTIC CONTROL

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Read before joint session of Laboratory, Public Health Administration and Food and Drug Sections, American Public Health Association, at San Francisco, Cal., September 14, 1920.

TO ONE who has closely watched the attempts at control of narcotic drugs for many years, the past year is one of surprise and confusion. It has been especially marked by the most amazing springing-up of absolutely new people in control of the situation and the discarding of all the experience of the past by them, resulting in a complete reversal of plan, conception and attitude.

When carefully studied, however, it contains some very striking lessons. It has been a year of intense administrative experiment in drastic control, and along with that a persistent pushing aside of the attitude of scientific study which seemed to be established in the minds of both lay administrators and medical men, and which marked the most promising feature of the situation a year or two ago.

It has been a year of most remarkable newspaper publicity on addiction, of the exercise of administrative power over professional men in their judgment such as has never before been dreamed of, of registration with such accompaniments in announcement and methods of carrying out as paralleled the rogues' gallery, of experiments in hospitalization, and in public clinic handling.

It is, therefore, a good time to stop and take account of stock and see what has been the result of this year, and whether its results are such as justify its continuance or a return to more of an approximation of the situation which

existed previous to the control of those who have dominated activity of late.

Perhaps the best summary of the developments of the past year is expressed in the surprise said to have been voiced by a judge during the hearings on the Cotillo Bill at Albany (a bill which made it impossible for the medical profession to treat addicts by requiring the personal administration of every dose of narcotic drug) to the effect that this bill would undo all the constructive work and experience of the past six years. As this bill was framed by those in power it expresses their conception and plan. Whereas a year ago administrators were apparently definitely committed to the attitude of encouraging medical men to care for addicts and study this condition of addiction, we find in such bills as this and in the apparent aims of the present administrators a determined effort toward the elimination of the physician, and the enforcement of institutional treatment. It is unfortunate that such events as the Cotillo hearings are not known to many, for they marked a reappearance of men of previous activity and experience, and provided a much needed discussion of present conditions.

It would be impossible to make the review which I propose without descriptions and criticisms which might be wrongly interpreted as personal attacks. I am stating, therefore, at the outset that I am dealing only with official acts of the individuals whose names appear

in what follows. As individuals they mean nothing to me one way or another, but as officials in whose hands has been placed an enormous power for good or evil the individual must of necessity be subjugated to the more important consideration of his official acts. The assumption of public responsibilities always entails the possibility that in an analysis, discussion or criticism of official acts, personal feelings may suffer.

As New York has been the storm center of official announcement and of the most extreme administrative experiment its results are best studied.

An illuminating statement that apparently inspired the control procedures of New York City was made at the time of the Chicago meeting of this association, at a meeting of the Morals Committee of Chicago, which the writer attended. Dr. Copeland was asked what would be his method of procedure for the control of narcotic drug addiction were he given absolute power. His reply, which I noted in writing at the time, was emphatic and certainly sweeping. He stated that he had given the problem considerable thought (he had then been in health work for a few weeks only) and that if he had his way every addict "would be photographed, finger-printed and required to receive every dose of his drug at the hands of an employee of the health department." He further stated that he would abolish opium and all of its derivatives, but that he felt the profession could not do without cocaine. The next morning the Chicago Tribune had the following headlines: "WOULD MUG ALL ADDICTS."

Fortunately some better influence perhaps prevailed in a measure, for the New York City Health Department later in its registration of addicts adopted only "mugging." For the benefit of those who did not have an opportunity to witness the operation of the registration of narcotic addicts in New York, I would state that for days and weeks hundreds of unfortunate sick people, men and women,

old and young, white and black and yellow, stood in straggling lines herded by burly policemen, awaiting their turn to undergo this humiliating and unnecessary identification. Here for the first time in their history, hundreds of respectable and respected men and women were forced to associate with prostitutes and panderers and acquired their first knowledge of the peddler and his underground traffic. Here, side by side, with the incurables and innocent were the vicious-minded of the underworld and criminals. They were all "dope fiends," that was enough. Inside at the registration desks their names, ages, addresses, their occupations and names of their employers were recorded by clerks who lost no opportunity to exploit their misery and insult them with impertinent questions and remarks. Hours of waiting in rain or shine was a matter of daily occurrence. Many of them dropped from the lines in collapse or were forced to purchase from the peddlers who, taking advantage of their opportunity, hung around the clinic with their wares.

These long lines of miseries were photographed and exploited under scare lines in the daily papers with such headlines as "New York City Dopes," while the sight seeing busses, loaded to capacity, passed slowly by to the megaphoned announcements of "New York's dope line" by their conductors.

It may be, in some country with which I am not familiar, under some barbaric regime with which I have no experience, that similar procedures have been adopted in the name of public health!

But this was not all. After the registration came the "Clinic" so-called, where those who had obtained their registration cards and who could not secure the services of a physician and were not yet familiar with underworld sources, went for their necessary supply of opiate. Here, from information gathered from many who had attended, their handling was far from meeting the requirements of even the most negligent medical and

dispensary methods. Their description of such examinations as they received and the manner in which arbitrary dosage was assigned to them, the absence of any inquiry into their physical needs and other general personal and physical conditions, and the utter disregard of any of their medical or educational needs, deprives this institution of the right to any proper designation as a medical or public health activity and reduces it to the level of police methods or merely a narcotic hand-out, whose conduct forced away from it all those of self-respect and economic standing, and apparently finally left it an exploitable asset for the degenerate, the criminal and the peddler.

In proof of this is the well-known fact that peddlers, who were not even themselves addicts, secured supplies of narcotics at the clinic, and in further proof is the fact that the clinic was finally closed by the Federal Government.

In commenting upon this event, Commissioner Kramer is quoted in the Los Angeles Examiner, April 26th, 1920, as stating that his chief field narcotic inspector, Col. L. G. Nutt, stood in line and secured "dope" from the attendants of the New York clinic just as if he had been an addict.

In the New York Sun of May 3rd, 1920, the following story is presented "Drug Evil Routed. Hospitals to Close. No Further Use For Worth Street Clinic Except Registration.

"The Health Department announced yesterday that the narcotic drug evil, which once played so important a part in the life of New York's underworld, has been virtually stamped out.

"Doctor Royal S. Copeland, Health Commissioner, said the Worth Street Clinic had served its purpose * * * and now it is only necessary for the public to realize the enormity of the drug evil and insist on Congress passing laws to forbid the importation and manufacture of opium and its derivatives."

Quite a different reason for closing the clinic! The statement of Commissioner

Kramer that the Government had to close the clinic seems amply supported as the explanation of most credence, by the revelation of the Cotillo hearings where it was definitely stated by unquestioned and disinterested authority, that the underworld traffic and street peddling of drugs had been on the rapid and steady increase from the time of the initiation of registration and of the clinic. Apparently the narcotic evil was not "stamped out." The total result of this extreme administrative experiment, seems now by consensus of reliable opinion to have followed exactly the previous histories of similar efforts, and to have resulted, according to newspaper and other announcement, in greatly increased and increasing smuggling and street traffic in narcotics and the rapid increase of addiction among those types and classes of youthful citizens reached by the peddler and trafficker and their agents.

Incidentally another interesting and profitable enterprise, which is now revealed was initiated by compulsory registration of the type and form in New York City, was that of printing for sale facsimile copies of the registration and exemption cards, which could be easily bought and used.

To those of us who have been interested for years in the study of this health problem, there naturally occurs the thought, "Are the results of the New York clinic a fair sample of what may be expected from narcotic clinics in general, or was the failure the fault of the administration and conduct of the clinic?" I think this question can best be answered by directing your attention to another clinic, a real clinic this one, run on medical and scientific public health lines, hopeful in its outlook, humane in its methods and conduct, a veritable blessing to its patients and a matter for the highest commendation for the department under which it was instituted. I refer to the Narcotic Dispensary in New Orleans, established by the Louisiana State Board

of Health under the direction of Doctor M. W. Swords.

About a year and a half ago, when the passage of a state law imposed new restrictions upon physicians and addicts in Louisiana, "a mass of suffering humanity," as Doctor Swords expresses it, appealed to the State Board of Health for relief. With no previous experience, no pet theories, no press agents or professional reformers at his elbow, this physician summed up the situation in about these words, "These people are sick, terribly sick, and it's up to us to help them." Without funds, without any regulation or legal provision, he secured at once on credit from a wholesale drug company a supply of narcotics and set about the relief of suffering which surrounded him.

He made no spectacular promises nor ponderous statements. He said that it seemed to him that these cases were both economic and health problems, and he set about his work in the only rational way that presented itself. An excellent clinician, he began by studying before talking, to learn what he was really dealing with.

The objects of his dispensary and the interests in which it was conducted are best stated in his own words:

"We realize that a permanent cure of those afflicted with drug addiction-disease is impossible, in the great majority of cases, unless the addict be placed in a position to secure scientific treatment. The sole object of this dispensary is to relieve suffering until such time as a scientific treatment may be had.

"The basis of operation is legitimate supply versus illegitimate trafficking; to prevent a victimized people from being more thoroughly victimized by heartless, profiteering 'ghouls'; to prevent the making of new addicts; to diminish petty thievery which constitutes a tax, or burden, on society, for the reason that many addicts, unable to pay the price of \$1.00 to \$3.00 per grain, are forced to criminal methods.

"In the operation of this Dispensary,

we have refrained from 'registration' of addicts, compulsory hospitalization and police interference, all of which would intimidate the addict and drive him to the underworld supply, and thus defeat our primary purpose. We have no registration to compromise addicts or subject them to possible blackmail. Their secret is guarded in strict confidence. We work in harmony with officials, but not to the extent of betraying confidences."

Here then are two examples of the clinic experiment in narcotic control. That the one failed where the other succeeded is not difficult of understanding. They were basically different in conception and operation. They prove that success is not so much a matter of administration as of administrators. Any activity which tries to handle individuals as "addicts" instead of as "patients" will fail as it always has and will serve to increase the very evils which it pretends to help.

The New York clinic in its early announcements was going to "solve the drug problem." It was promising to do what everybody who knew anything about the practicality of the measures and methods announced and advertised, knew could not be so accomplished, and knew to be not only impossible but in the light of past experience inevitably disastrous.

The New Orleans Dispensary was established simply to do the things it could do to the extent to which it found it could do them intelligently and successfully until such time as it could find ways of doing more,—the true medical and public health spirit.

The Committee on Habit-Forming Drugs of the Food and Drugs Section of this Association, in its report at the New Orleans meeting, declared itself emphatically against such registration methods as have been employed in New York, and from results reported and found to exist upon investigation your Committee's attitude seems to have been well taken.

It must not be understood that in its

report the Committee opposed registration and clinics in general, but merely emphasized a warning against the conducting of such control measures in such a manner as to produce panic and unnecessary hardship among honest sufferers, harmful regulation of the honest doctor with the consequent inevitable stimulation of smuggling and criminal traffic.

Unfortunately the mass of publicity and newspaper announcement preceding the initiation of compulsory registration had not been at all educational but rather spectacular, misleading and panic-creating, and entirely false and unjust as relating to the average opiate addict, creating a lurid atmosphere of vice and criminality about him instead of one of real public health education as to physical and other realities and facts, and placing those about to be registered in an intolerable situation of social and economic jeopardy which apparently forced a majority of the narcotic sufferers to evade it by other means. The newspaper announcement of the contemplated measures which were to accompany registration were in themselves enough to take it entirely out of the province of public health and place it in the category of ignorant persecution and to abort absolutely the purposes for which it was stated to have been instituted.

With the enforced closing of the New York Clinic the registration of the narcotic addicts as an activity of the Board of Health was ended and was continued by the State Department of Narcotic Drug Control under Deputy Commissioner Sara Graham-Mulhall. In this office also lay the power of granting exemptions to the general registration as practiced, a power capable of great possible abuse and misapplication. There have apparently been many instances of these unfortunate possibilities in the placing of such arbitrary power in individual hands. It requires a very rare combination of understanding, knowledge, experience and personal stability to render such power anything but a grave menace.

From evidence obtained from patients, relatives of patients, volunteer workers and other disinterested observers of the workings of this office, its inherent dangers are all too apparent. Without medical knowledge, with no provision for experienced medical examination and advice and frequently with total disregard of the recommendations of the family physician, exemptions have been granted or denied in the most haphazard and casual manner. Cases where drug denial for a few days or even hours may entail the most disastrous consequences are delayed in securing their exemptions beyond all reasonable excuse of even the short official day and are kept waiting where every moment of delay is an agony of suffering, suspense and economic damage, while others in far less physical or pathologic need are promptly granted indefinite exemptions. The individual instances of this nature which have come to my personal attention are such as to shock anyone in whom the personal element and humane instinct have not been entirely buried in bureaucratic officialdom.

While the recommendations as to exemption of certain physicians are recognized without question as without corroboration, those of others are denied with equal promptness or the bearers thereof so harassed, delayed and confused with unnecessary red tape as to make them dread the interviews required by the frequent renewal of their cards. The attitude of this Department has been so hostile towards physicians as in some instances to amount to individual persecution.

In addition to the aforementioned control methods we are hearing a great deal about the demanding of enforced hospitalization. In considering the practicality of this measure it is well to inquire into the actual results of such hospital experiments as have existed or do exist, and to compare their official or statistical announcements with the actual facts.

To confine my remarks further to ex-

amples with which I am personally familiar, I would mention the Riverside Hospital which has been conducted under the direction of the New York City Board of Health in coöperation with the State Department of Narcotic Drug Control.

According to recent publication of results in the *Monthly Bulletin of the Department of Health*, February, 1920, the number of cases "successfully" treated was given as 809. No mention is made of the unsuccessful cases. In an article read by Deputy Commissioner Mulhall in May, 1920, the following appears: * * * "The splendid treatment at Riverside Hospital demonstrated convincingly that taking the addict off the drug can be a simple and safe process, which was effectively administered to 2300 addicts at a cost of nearly a half a million dollars of public moneys, \$200 per capita." The next paragraph of the Deputy Commissioner's article reads as follows: "What was the result of this extensively demonstrated cure? Ninety percent of the hospital discharges went back to the drug, because of lack of scientific after-care." To parody an old riddle one is tempted to ask "When is a cure not a cure?"

These statements, however convincing they may be to the casual reader or uninformed official, are very disappointing to one accustomed to deal with scientific statements and carefully considered announcements, and who is familiar with previous narcotic effort and activity. For instance, upon whose authority and after what inspection were these cases pronounced "successfully treated?" So far as can be ascertained there have been no persons of previous authority and real experience connected either with the Board of Health or the Department of Drug Control, and we certainly are not justified in taking the statements of the Director of the Bureau of Public Health Education, Dr. Dana Hubbard or of Miss Mulhall as competent upon their individual opinion simply, especially since so much of the current information among

addicts, social workers and physicians, and such as was voiced at the Cotillo legislative hearing casts grave doubt upon their accuracy.

The public hearings and reports of the New York Legislative Investigating Committee demonstrated both the inadequacy, incompetency and failure of the institution or hospital treatment of addicts, and showed the futility of statistics of "cure." The very recent hearings on the New York legislative proposals pointed emphatically to the conclusion that the situation today is, in the matter of available results of institutional treatment, at least no better than it was then. Personal testimony ample and unanimous confirms these things. Wherein then is the justification for Miss Mulhall's use of the word "splendid treatment" or Doctor Hubbard's designation of "successful cure"? Neither of these two persons can be held to be of experience or training or abilities comparable to those of the authorities who have discussed the matter in opposition. I do not need to take upon myself a personal support of this statement. It has been publicly demonstrated at official hearings.

Casually throwing the blame for therapeutic failure upon lack of after-care, as Deputy Commissioner Mulhall has done in her article already quoted, is to my mind an apparent evasion of an admission of failure. If one half million dollars have been spent at Riverside alone with only such results as are self-admitted, where is the justification in the appropriation of further huge public funds for administrative experiment along lines which have previously been tried and whose causes for past failure are matters of public record? Before proceeding further with their personal desires and opinions these people should consult the mass of available data and results of similar experiment in the past, before they became officially or otherwise interested in the subject.

The mass of competent material, scientific and lay, which is available leaves no

excuse for proceeding upon their personal opinions or for voicing them in dangerous generalities. Certainly such huge public funds should not be so casually expended.

The above statements and criticisms are not to be taken as condemnatory of competent hospitalization as one of the valuable accessories in the handling of this problem. Neither, as already stated, am I opposed to clinics scientifically and humanely conducted.

In the preceding discussion I have not attempted to cover many of the control experiments of the past year or two, but have deliberately confined my remarks to the three agencies, registration, clinics and hospitalization, which for the most part have been employed by administrators and which have had the most publicity and most profound effect upon public opinion by the oft-time hasty and unwise publicity given them. I realize that practically all I have said has been destructive in nature and right here I wish to state why and to give a definite reason for the failures.

The one fundamental reason for the failure of the activities which have been carried out and for their character is the complete misconception on the part of these administrators as to the true nature of the condition they are seeking to control or alleviate. Briefly, they have proceeded on the assumption, according to their reiterated statements, that narcotic drug addiction is a vicious habit or simply a temporary functional disturbance, and for the most part exists in the unstable, criminal and degenerate, and that it is a matter chiefly for forcible control. As a matter of fact this is untrue and in direct contradiction to the available records of laboratory and clinical work of men of unquestioned standing, reliability and experience with whose work they seem to be apparently unfamiliar. For several years preceding the spectacular activities of the past year, there was building up in the medical profession and among experienced ad-

ministrators a rational and scientific familiarity with and understanding of the nature of narcotic drug addiction.

Jennings in Paris, Petty, the American pioneer, Hirschlaff, Gioffreddi, Valenti, Faust, Pearson, Bishop and others whose works were cited in the bibliography attached to the report of your Committee on Habit-forming Drugs have all contributed extremely valuable medical facts and laboratory data which have undoubtedly placed this malady upon a true disease basis. It is impossible to review this material in any comprehensive manner here. But for the benefit of some who may not be familiar with it I would state that Hirschlaff, Valenti and Gioffreddi succeeded in establishing in rabbits, dogs and cats the identical mechanism of narcotic drug tolerance which clinicians have observed from time immemorial in human beings, and in demonstrating that drug withdrawal in these animals resulted in a definite and specific symptom-complex identical in every expression with that observable in humans. Petty, Lasse, Bishop, Van Kleek, the writer and many others have called attention repeatedly to the unmistakable development of narcotic addiction *in utero* and to the unmistakable symptom-complex of withdrawal after birth in the offspring of addict mothers. This literature is easily available and further reference to it is needless at this time.

To those of us who had followed the growth of this tremendously important public health problem and who had watched its effect upon the public health and welfare, the work and facts referred to had offered an increasingly hopeful outlook for a sane, rational and satisfactory solution. Without any opportunities for dissemination of this knowledge other than those offered by such meetings as this one and the occasional publication of articles in uncontrolled medical journals, we have constantly endeavored to bring these facts before the profession, administrative officials and the public. We have watched the theories

advanced explain satisfactorily every observable phenomenon either physical, psychological or social in nature of our addict contacts and we have been working with them continuously. We have seen repeatedly therapeutic measures based upon these theories produce results obtainable in no other way. We have been the recipients in a long procession of instances of such expressions of confidence and gratitude for what was claimed as our understanding as to form possibly the most convincing argument of all as to the truth of our beliefs.

I personally went through in my early work in Jacksonville all of the doubts, quandaries and experiments that I have mentioned and many others. I believed the repeated statements of men prominent in the profession that there was a "cure" for narcotic drug addiction and at different times I believed in more than one. To my certain knowledge this early work resulted in the death of only one individual but I shudder to think of the needless suffering I caused to hundreds of others. Years of exploitation, lay advertising, professional pseudo-scientific announcement, and persistent disappointment in results taught indubitably that there is no "cure" for narcotic drug addiction; that no specific formula or routine procedure will give results in more than an insignificant few of the train of symptoms induced by this disease. In spite of repeated claims of such men as Towns, Lambert, Keely, Oppenheim, the Normyll remedy promoters, and others of like ilk, there is no panacea for this disease. In spite of the disappointment that this has been to many practitioners, the proved failure of these well-promoted "cures" is perhaps the most hopeful sign of the present. Thrown on their own resources, discouraged by their repeated failures with the heralded "treatments," picking up here and there a basic fact, numbers of medical men throughout the country have strayed from the fold of herd-thinkers, abandoned in disgust the institution-promoters and remedy-

sellers and have attacked this problem as any other in the realm of medical practice.

Wherever the practitioner has been able to forget the profit-seeking or fanatic propaganda and older fetishes, he has begun to observe clinical signs and symptoms. He has looked upon the addict as an individual with vital organs whose functions have been seriously disturbed and crippled by a variety of toxic agents. Once arrived at this stage of understanding he has been content to apply broad therapeutic judgment and experience to the study and treatment of this very real condition, and, in just such degree as his training, clinical experience and powers of observation have permitted, has he succeeded in handling his cases—in curing narcotic drug addiction-disease.

The loose use of such words as "cure" and the generalizing phrases of the announcements of the past year have been among the unfortunate manifestations of a period of lapse from the close scientific study of the condition, which was then under way.

Personally I am old-fashioned enough to associate in my mind the word cure with the termination of a disease process and reinstatement of the individual to at least approximately good health. To my way of thinking a patient is not cured nor is his treatment successful who still has distressing manifestations of his original disease and is thereby unfitted for assuming his place in work and society. In other words, I would here make a distinction between cure and "statistical cure." I have interviewed a considerable number of the "statistically cured" of Riverside Hospital and several physicians of my acquaintance have observed others. In all these instances one of three conditions prevailed, either these patients admitted having secured smuggled drugs while in the hospital, had relapsed within a very brief period after their discharge, or were in such wretched physical condition as admitted of no other course within the near future. In this connection it

must not be forgotten that there is a vast difference between drug withdrawal and cure. Anybody, from the Riverside Hospital authorities down to the precinct sergeant, can withdraw the drug. They both do and by not dissimilar methods. No one, however, who has followed the progress of the past few years, in the handling of narcotic drug addiction-disease, will be deceived for one moment in thinking that such results constitute cure. This has been repeatedly emphasized by those whose research and experience both experimental, clinical and administrative is such as to lend credence to their statements and respect for their views.

As a matter of fact, there is no malady which offers greater hope from rational treatment than does this, but unfortunately it is also true that there is no other disease in which nature unassisted does so little and in which haphazard or routine procedures accomplish such devastation, physical, mental and moral. An individual may resign himself to a siege of typhoid fever with reasonable assurance that average medical judgment and average nursing will result in his recovery; he may contemplate with comparative serenity an operation for gallstones or appendicitis, secure in the belief that skillful technique and the definiteness of the surgeon's knowledge will entail but a brief stay in bed. The narcotic addict, however, impelled by probably the strongest of natural human desires, that of physical and mental preservation of himself, applies anxiously for treatment at institutions of widely-advertised repute only to find that his sufferings are deemed imaginary, his malady a vicious appetite and he, himself, unstable or degenerate. Racked with the details of a routine sequence of drugging, frowned upon as an outcast, he is discharged at the expiration of a predetermined time, a physical wreck—a typical “statistical cure.” In a vast majority of cases this means speedy “relapse,” another discouragement, and then another summing up of courage and saving up of

funds and a repetition amid different scenery.

We are frequently told that nothing the narcotic addict says can be believed and we frequently hear of the “psychology of drug addiction.” The psychiatrist tells us that all of the horrible things that are told about the addict, his lying and deceitfulness, his fear of detection, his mental and physical degeneracy, are due to the taking of an opiate. He would have us believe that these things are a property of opium and, reasoning thus, he calls it the “psychology of drug addiction,” the “opium complex.”

Instead of opiate-using, as a cause, let us substitute *the situation in which the opiate user finds himself*, and paint the same picture of fear, secretiveness and deceit. Here then we have the potent suggestion of generations of public opinion as the cause of the narcotic drug addict's frame of mind.

The moment that an individual finds that the use of a narcotic drug, regardless entirely of the circumstance which led to its first administration, has reached the stage of addiction-formation, in other words, has reached the stage where to discontinue the drug requires greater knowledge, greater fortitude, greater powers of enduring suffering, than he or she has strength for, that moment is the picture of what his family, friends and the public in general, will think of him inevitably forced upon his mind.

Why should he not be fearful, secretive, and why should he not become deceitful? He realizes that no one not addicted can possibly understand his situation; he has heard, all his life, of the “dope fiend,” the “opium appetite;” he has been told that our jails and insane asylums are filled with drug wrecks; he has been taught from childhood never to countenance a deleterious habit; his parents have preached, if they were worthy of his idealism, strength of character and horror of enchainedments of any kind. This very training, so desirable, so admirable and so necessary for the moral development of

the child, serves only, in this instance, to handicap him in his effort to secure his freedom.

All of these things so terrorize him at the thought of discovery, so convince him of his moral and intellectual weakness as absolutely to forbid that he confess his condition to even his most intimate relative or friend.

Thus is the picture of secretiveness, fear and deceitfulness stimulated, not through the physical effect of the drug upon his brain or other tissues, but through his knowledge that universal condemnation will be his, if his condition be discovered.

Add to this the physical incapacity which finally develops from the ignorant and excessive use of the drug; add to this the individual's financial depletion, the profound impressions made by repeated ineffectual treatments—and we find that this picture has gradually shaped every act of his life; that from his first waking moments, throughout the day, his one compelling idea must of necessity be that of deceit, secretiveness and fear.

Surely, there can be no more compelling suggestion than that of medical and popular opinion, than that voiced in the action of court proceedings, of religious preachments, in the attitude of those nearest and dearest to the sufferer.

Why look for the development of this "complex" in the mysterious action of a vegetable alkaloid, when we have so obvious a cause as the one portrayed?

Pass on again with our chain of reasoning: follow this picture in its effect upon the individual's life a little further. We arrive at the later picture, that of extreme anxiety, of physical depletion, of financial wreckage, arising jointly from inability to work and cost of the drug. Add to this the acute physical suffering of withdrawal and hence the very real fear of deprivation,—through lack of funds or other cause,—and at once every motive of the later stages becomes evident. We are brought to where the most powerful of all instincts, that of self-preservation,

adds its suggestion to the picture, and we need not wonder, nor moralize, nor become hysterical about the acts of violence, the thievings, the murders even, that are committed at times by those who find themselves in the extreme stages of this situation.

No, there is no "psychology of drug addiction," no psychology characteristic of the user, as such. The psychology of the drug addict is the psychology of the average human being. It is the psychology of you and me when in pain, of you and me when desiring relief, of you and me when either of us finds himself incapacitated and quite innocently in a situation he has been taught to believe is degrading. It is the psychology of self-defense, of self-protection, and it is the psychology arising from persecution, intolerance and ignorance. It is the psychology engendered by the attitude of the man who has not suffered and who, without imaginative faculties or scientific knowledge, tries to explain the mental state of others. It is the psychology of the fear of death in one who knows what will avert his end. It is no less natural, this mental state, no more morbid than the psychology which prompts a thirsty man to drink, a hungry man to eat, a ravished woman to defend herself, an oppressed people to wage war.

That this is true is susceptible of the most convincing proof, a proof available of employment by the most skeptical, a proof which is universally applicable to every case of drug addiction and one which appeals alike to the intellect and humane instincts of any honest seeker after truth.

Relieve a drug addict from all fear of censure; let him become convinced that you believe he is entitled to a treatment for his condition, reasonably free from torture; treat him, in other words, as any other sick man, with the same sympathy that you accord the sufferer from tuberculosis or typhoid or from any other disease; assure him that, until a rational treatment can be secured, his physical need for his drug will be provided for at

a price within his reach; remove him, in other words, from the world of contumely in which he finds himself, to one of understanding—and you will find a man or woman so like yourself, when sick and weak and tired and frightened, that all thought of deceit, secretiveness and fear, of a depraved or degenerate individual, must vanish from your mind. You will find a human being suffering from a disease with a definite pathology of its own. You will find a totally different individual from the one you expected to find, an individual who emerges at once, or, as soon as he may reasonably be convinced of the honesty of your attitude, into such a state of mental quietude, relief and hope, as will completely destroy any remaining illusions in your mind as to the intrinsic degenerating effects of opium. You will find a man or woman who hopes by day and dreams by night of relief from physical suffering, of removal from censure, and of understanding by his fellow-beings; one whose hopes, ambitions, principles and instincts, are very like your own, and you will further find that he will quite willingly, nay, eagerly, follow any suggestion for treatment and cure, which his own experience and knowledge of his body-needs have not already taught him is useless or ineffectual.

With the above explanation for failure what would constitute a hopeful program for administrative activities?

First: Study of the facts of narcotic drug addiction-disease and their admission. Without this there can be no constructive effort.

Second: Medical and lay education in every possible manner through existing publications, in county, state and national association meetings, through the departments of health and most important of all, in medical schools where complete disregard of the dangers of opiate administration has frequently existed, as well as in the lay press and periodicals.

Third: The establishment of centers such as small clinics or dispensaries where the indigent and honest addict can secure

instruction in the proper handling of his drug until such time as he may be brought into suitable physical and mental condition for treatment and until we have secured and trained men capable of the intelligent handling of this disease. This unquestionably means that, until a greater number of medical men can treat addiction-disease with reasonable hope of successful outcome, the sufferers must be kept in drug-balance, i. e., they must be supplied as physically necessary in decent and legitimate manner with the drug of their addiction.

Fourth: The preceding paragraph leads us directly to the question of control of the underworld traffic and the formation through it of new addicts for the purposes of commercial exploitation. This is a simple business proposition that any merchant would admit as sound. By removing the odium attaching to this condition and by supplying at the prevailing relatively low price, narcotics to those who physically require them, as indicated in the preceding paragraph, we will remove the profits from underworld traffic and check at its source the most menacing of all narcotic evils, which as has been repeatedly and conclusively demonstrated, cannot be done in any other way.

Fifth: With the realization that this is a true disease condition and that police measures are not essential for the successful treatment of the majority of its sufferers, we may hope for the much needed admission of these sick people as patients to the general hospital. Both dispensaries and hospitals should be made use of as centers of medical education and the very valuable clinical material therein should be utilized, as is the custom in other conditions.

It is impossible, in a disease so protean in its manifestations, so varying in its individual susceptibility or resistance and complicated as it is with so many incidental conditions, to outline even a theoretic course of treatment, nor would this be the place for such an utterance. In the hands of an open-minded medical man there is an

abundance of material to suggest practically every phase of treatment. When all is said and done health departments with the exception of one or two, where they have attacked the problem at all, have placed themselves in the very wise position of not being as yet in possession of sufficient data or knowledge to warrant them in introducing drastic control measures tending to force the present handling of honest sufferers of this disease out of the hands of the family physician. There are some of them that are making preliminary studies to determine the proper sphere of their activities and to place themselves in a position where they can give reliable advice and information to the physician and the addicted sick, something most sorely needed.

To sum up, we must decide once and for all between two extremes of thought. If narcotic drug addiction per-se is a habit, a vicious appetite and a mark of mental or moral degeneracy, then it is not a matter for either health department control or medical attention, but rather one for the police and reformer, for it is extremely doubtful in my mind if the seat of moral turpitude can be reached by either pill or powder. If on the other hand, this is a true disease with a pathology and symptomatology, then surely it is not a matter, in the average case, for police control nor does it concern, in other than its criminal relationships, the reformer and the legislator. In other words, is the health department going to attack this subject as one in which it is allied with scientific research and the best medical thought, or is it going to form a partnership with the reformer and the propagandist, as a branch of the police department, in the character of its activities and announcements? Is it going to encourage medical men in study and attention to physical problems or is it going to drive them away from their consideration?

To those of us who for many years have sought the truth and have watched

with intense interest its gradual dissemination among the profession and laity, a matter of the gravest concern is the extent to which public opinion, medical thought, and even federal activities can be influenced, and perhaps dominated, by assiduous publicity, and how profound a conviction attends the statements of those in official or pseudo-official position, regardless of the qualifications behind such announcement.

Let anyone interested inquire whether the Health Commissioner of New York City is, either by previous training or experience, an expert in the handling of narcotic drug addiction or whether since his appointment he has been guided by the best expert medical and lay opinions of today.

Let such interested person inquire whether the Deputy Commissioner of the State Bureau of Narcotic Control, who is practically in sole authority over the great Metropolitan District under the state law, had, prior to her appointment to office, any other experience in narcotic drug addiction than that gained through her presidency of the Normyll Association, which advertised and sold the Normyll Remedy, a preparation for the home treatment of narcotic drug addiction.

And while looking into these records, let our interested inquirer read for himself the admission of lack of all previous experience with narcotic drug addiction on the part of the Director of Public Health Education of the City of New York and of the Chairman of the Narcotic Committee of the American Medical Association when appearing as sponsors for the Cotillo Bill, which practically sought to legislate the practitioner of medicine away from his addicted patients.

To sources such as these can be traced recent policies for the control of this great health problem. Inasmuch as these policies—which are diametrically opposed to those advanced in last year's report of your Committee on Habit-Form-

ing Drugs—seem to have led only to failure,—I would ask that this report be considered anew by interested health executives. I would also ask that the competency of the authorities therein quoted be likewise investigated.

The administrative plan suggested in this paper is based on the conception of narcotic drug addiction set forth in this

report and is in accord with the views and experience of this latter group of men.

After a just consideration of these two opposed policies, based as they are on two widely varying schools of thought, the health officer seeking a working program will be in a position to make an intelligent choice.



SYMPOSIUM ON NARCOTIC DRUG ADDICTION

III. DISCUSSION

The papers forming the symposium on Narcotic Drug Addiction were presented at the joint meeting of the Laboratory, Public Health Administration and Food and Drug Sections at the San Francisco meeting of the A. P. H. A. on September 14, 1920. Following the papers the meeting was open for discussion. The principal arguments follow, taken from the stenographer's records.

E. S. BISHOP, M. D. of New York City was the first speaker, his arguments being substantially the following:

In the papers just presented is made apparent the real conditions underlying the development of the present narcotic drug situation, or problem, or whatever you want to call it. It is also apparent that these conditions which have brought about its development have been and still are the real obstacles to its solution and practical remedy.

These basic conditions are tersely expressed in the conclusion of Doctor Terry's paper, where in one of his recommendations for practical remedy he points out the necessity for the determination of all the facts of the situation and of the condition and for their general recognition. As he says, until this is done there can be no constructive effort.

In this he has struck the keynote of most urgent need. The greatest obstacles to the practical remedy and control of the narcotic drug situation have been made possible by the non-fulfillment of this need.

These obstacles have been periodic exacerbations of conflict and controversy over

various issues associated with or manifested by one or another aspect of the situation, and in conjunction with these exacerbations recurring struggles by one or another group to dominate the entire situation and influence and control all of its activities in accordance with particular conceptions, or opinions, or desires, or interests.

In the pauses between these acute exacerbations of conflict and controversy and struggle, and in so far as possible during them, there has gone on a steady constructive work of earnest and honest endeavor, in study and observation and effort, carried on by many individuals in private or official capacity.

Much of this work has been done in spite of great opposition and obstacles. In comparison with some activities which have been of late persistently announced, it has had little recognition or appreciation or wide dissemination. And yet in its mass and aggregate it probably represents far more personal contact, personal effort, personal study, and personal experience. In many ways the aggregate of expression and opinion of these less advertised many sums up widely at variance with the announcements of the more persistently stated few.

An excellent example of this has been under discussion at this meeting. This is the matter of public clinics, or dispensaries, for addicted persons. Many of the health officials present have worked along such lines in the relief of the present situation. Those whom I have heard discuss their experience and results are in accord with the clinic of the type and aims and conduct

of the one in New Orleans, conducted by Doctor Dowling and Doctor Swords, rather than that of the type and conduct of the New York City effort conducted under Doctor Copeland and Doctor Hubbard.

Taking these two types of clinics for comparison, as Doctor Terry has in his paper, is there anything in common between them? If the New York City clinic failed to accomplish anything of good can its failure be interpreted as an example of the failure of clinics in general, or should it be interpreted as an example of the failure of clinics of the New York City type and particular conduct? Until the actual conduct and aims and results, remote as well as immediate, have been exhaustively investigated and determined, is anyone justified in applying to the practicality of the one the results of the other? Certainly the value of the one cannot be superficially predicated from the results of the other. And announcements and influence from the one should not dominate the situation as a whole until by open and unbiased analysis it has demonstrated the competency of its conduct and principles. Certainly announcements and expressions of opinion and experience coming from the New York City group, are in widest variance with those coming from workers in other places. Neither should dominate until there has been a fair, open and scientific evaluation.

Another example of divergence of expression is found in the reports signed by Dr. E. Elliot Harris as chairman of the committees of several medical organizations and the report of your Committee on Habit-Forming Drugs. There certainly should be forced some evaluation of the actual amount of experience, and investigation, and survey of the literature and the situation which went into the preparation of these two reports. The needs of the present situation are too urgent to delay such endeavor. Their acceptance and influence otherwise is purely a matter of which of them can dominate in publicity and dissemination.

This divergence of opinion is carried even into the estimation and interpretation of laws. In a recent report from a committee which was printed in the *New York State Journal of Medicine*, the statement is made that the New York statute enacted

about two years ago and in force for about a year at the time of the report, has had a fair trial. The statements brought out in the several hearings upon the proposed Cotillo bill recently introduced into the New York legislature by proponents active in the influence and conduct of the New York control experiments and experiences showed the greatest divergence and conflict in the appreciation of facts and in the interpretation of facts. The proponents of the measure advocated based their demands for more drastic control upon their expressed belief that the present statute had failed to control the evils of the situation. On the other hand it might very fairly be deduced from statements made by others that instead of the statute having failed, the actual administration of the statute had failed to comprehend its real purpose and intended effect or had not been sufficiently conversant with the full facts of the situation itself, and that some of the administrative measures instituted had tended to defeat some of the very results aimed at in the preparation of the statute itself.

Here were brought into the open in direct conflict two widely opposing points of view and conflicts of conception and of opinion. A mass of fact and material was introduced by experienced workers in various fields which had apparently not been at all taken into consideration by the draughters and proponents of the advocated legislature. Senator Cotillo withdrew the proposed measure after hearing both sides.

I have discussed the above not as a proponent of either side, but to show how acute is the present situation, and how vital to its solution is the early exposition of all of the facts of the situation. It was a similar situation which brought forth the New York state legislative investigation, under the chairmanship of Senator George H. Whitney. It may be that nothing short of another open investigation will bring an end to present conflict and struggle to dominate. Certainly it is most vitally necessary that at the earliest possible moment some unbiased, honest effort be made to get together all the facts and to evaluate them in strict accordance with their relative importance and to force in competent common sense their full and total application.

Two things are certain. One of them is

that we must do something to meet the indications, personal, economic, civic and medical of the mass of people already addicted. Another certain thing is that in the most practical way or ways must be controlled or prevented the further increase and spread of the evils of smuggling and street peddling of narcotics. The experiments seem to have demonstrated their failure. Where has been their fault? Is it that these experiments have jumped over the real work to be done, and have expressed themselves in phrases and slogans and panaceas that are not justified in general application by past experience?

Many of the men of longer experience, as is shown in ample data of reliable record feel that there should be no undue insistence upon any one line of procedure, but that various lines should be encouraged in the province of their competent activities. My own opinion is that the answer is going to be found not in any one limited line of endeavor. You cannot find any words or group of words that will at the present time provide slogans of miraculous solution. Control is absolutely necessary for some aspects of the situation, but it must be intelligent and competent control. "Hospitalization" is not a panacea. Some hospitals or institutions are good and others are bad. Upon what standard or accumulated data can you at present base your judgment? The past record of institutionalization as brought out by the Whitney investigation certainly is not encouraging, and the revelations of the hearings on the proposed Cotillo bill did nothing to change the findings of the Whitney committee. Is it a matter of doctors? Some doctors are competent and some incompetent. In this subject, still in a stage of active transition, who is going to decide or judge? "Administration" is not a panacea. In the past year of its most active and absolute exercise the worst evils of the situation seem to have increased, and remedy of the needs of the suffering seems as far away as ever. It is not then a matter of a phrase "administration." It is a matter of competent and intelligent administration for whatsoever administration can do. Imprisonment as a panacea is no longer in most places a matter for consideration. It was abandoned by all thinking people some time ago, and is only resurrected nowadays by the occasional up-

lifter or fanatic, or extremist of type. It has been repeatedly tried and failed. "Compulsory registration" has proven not to be a panacea, and by an increasing number is seen to have included but a small proportion of the addicted census, even under conditions of most drastic performance. And so you might go on with various panaceas and phrases around which have developed experimental activity.

If we have got to have a slogan that will remedy the addiction or narcotic situation, I would suggest one which might be tried. It is "competency and hard work." You need laws and administration of laws. Make those laws competent by finding out all the facts of the situation before you pass them. That means a lot of hard work in itself. You need administration. Make it competent administration and see that it does the necessary amount of hard work in finding out what administration can do and doing it well. You need doctors. Make those doctors as competent as possible as early as possible. You need clinics. Find out what those clinics can do and make them be competently conducted to do it well. You need hospitals. Study the hospital results of the past, and make the hospital conduct of the future competent in the hard work necessary to the fulfillment of its mission. You need spread of information by various announcements. Make it competent and truthful. Hold every man or woman who writes or speaks to account for the actual work performed and for the basis of experience or study behind what they say. Whatever you need make it competent and make it work, and make it work on the job it is fitted for. Utilize every honest agency for competent honest hard work. That is the solution of the narcotic drug problem. Find out what it is, not what a part of it is. Get all the facts and then remedy them as fast as you can, by competent hard work, in medicine, in the laboratory, in public health education and administration, in correction where this is needed. The only slogan that I know that is any good is "Competency and hard work and getting at all the truth."

Here Dr. Bishop paused, it being the conclusion of his general argument. Questions were asked from the floor with reference to hospitalization of narcotic drug addicts and enforced hospitalization. Dr.

Bishop then continued substantially as follows:

If you pass a law for enforced hospitalization how are you going to hospitalize them? It was shown at the Cotillo hearings in Albany on the bill in which enforced institutionalization was demanded, that we could not begin to hospitalize all cases. It was shown to be impossible by judges and district attorneys and doctors and others. It was also shown that the hospitals that were handling them were not successful. Until we find out why they were not successful what is the use of continuing recorded failure at great public expense. Miss Mulhall seems to think that the answer is farm colonies. Personally, I think that is liable to be misused as another slogan or panacea. A farm colony may be and is useful for some cases, if the colony is competently conducted. If it is not successful it may be another very expensive failure. We had one in New York for a while. But it was not very successful. I believe it was discontinued some time ago. It ought to be very useful if it is competently run and admits only such cases as it can benefit.

Enforced hospitalization is necessary in a great number of cases. It may do other cases a great deal of harm. There are questions to be worked out in hospitalization of addicts before hospitalization will be successful in general operation. Hospitals are necessary, doctors are necessary, administrators are necessary, police powers are necessary, all kinds of things are necessary, yes, but until there is a foundation of established and generally recognized reliable information and knowledge, the average will not be competent and cannot possibly accomplish more than a temporary palliation of the condition. We have all much to learn, before we shall work out the final solution of this matter. We ought to look out that we don't do any more harm than we can help while we are learning it. We won't accomplish much of real final remedy until we have a broader and more general foundation of knowledge for a more general competency. Every hospital should, as soon as possible, learn how to treat the type of person suffering from addiction that would ordinarily go to that hospital. The underworld type of person, addicted or not—if he is a criminal in type or in fact—should be recognized and he

should not be mixed up with others not of his type. The very many addicted persons of highest character and personality, the judge, or the minister, or the doctor, or the well known business man—there is a very different problem there, and it must be met differently. The last hearing on the proposed Cotillo bill made very evident some of the obstacles at present insuperable in the plan of enforced hospitalization for all addicts. They are also fully discussed in the testimony and reports of the New York state legislative investigating committee (Whitney committee). There is considerable discussion of it in the literature. In the annual report of the New York City Department of Correction for 1915 in the report for 1914 on the narcotic wards there is a full discussion by me of the hospitalization of addicts under custodial conditions.

It would not take very long to straighten out the whole situation if we would all get on the job and study the whole situation and learn how to handle all the problems of it according to what each problem requires.

M. M. SEYMOUR, M. D., D. P. H., Provincial Commissioner of Public Health, Regina, Saskatchewan, spoke next in the following words:

"This undoubtedly is one of the very important questions that have come before us in the last few years, and as the recognized authoritative body on health work, I think that this question should be taken up by this association and dealt with so as to obtain all the information that is possible in order that that information may be passed on to those who can make the best use of it, and in saying this I refer to the general practitioner, to the physicians of this country. This question is of such momentous importance that, in order to obtain the results that we as an authoritative body should have in view, a committee should be appointed, and if it is not possible to obtain a sufficient amount of funds from this association directly, the influence that this association has could easily obtain the necessary funds from other institutions who have money for the purpose of accomplishing just such results as we have in view. The hookworm problem and other questions of national importance have been successfully dealt with, and this is one that I think this association should

take up, and appoint a committee, or at least should take some action in order that a committee be appointed to go thoroughly into this question."

The third and last speaker in the discussion was PETER H. BRYCE, M. D. of Ottawa, Ont., who supported the suggestion of Dr. Seymour that the matter of narcotic drug addiction be taken up formally by the American Public Health Association. Dr. Bryce's discussion of the general subject was essentially the following:

It has been my good fortune for many years to know something about this disease, and to have studied many years ago nervous diseases in Paris when I was a student under the great Charcot, and have tried in some measure since that time to connect the phenomena of these diseases of addiction with the problems, especially, of the nervous system. I cannot conceive, in these days of progressive enlightenment and scientific definition, anything more horrible than the methods—one can only use the term, police methods—of the old asylum of a half a century ago, which are being applied at present under such acts of the legislature as we have seen for the control of drug addiction. If one thinks for a moment—and I fancy every physician here has had something to do with the unfortunates who, no matter through what cause, become the subjects of morphine or of opium, no one can conceive a situation more horrible, as Dr. Terry has pointed out, than that of a real gentleman, educated from every standpoint, of the highest sympathies, personally and otherwise; and sometimes even a medical man becomes a subject of the use of drugs. There is no use in saying he is a degenerate. He is not. I have known the most magnificent men, physicians, who for years, through the misfortune of overwork in early years, have become drug addicts. If we are going to study it, we have got to study it in an entirely different way, that of Hirsch and Brown and of others who studied during the war. Anyone who will follow up closely the so-called shell shock cases of the war—they have been worked out by London men and Frenchmen, and by others—will know very well that in nearly every case of shell shock which was defined and worked out, that it is the result of a hysterocpilepsies and mentisms, and so on; that they all had a

background, more or less, of inherited nervous inadequacy. There is the starting point, that they had a nervous inadequacy which has to be dealt with from the standpoint of the trained physician, just as we deal with the alienist in his case. To say that the handling of insane people fifty years ago could be tolerated today is, of course, speaking of an anachronism. They are not treated as they were treated fifty years ago. Today we are told that two or three per cent of all persons of a community are feeble-minded, are subject to the effects of heredity. Now, if we are going to realize all these facts, we are going to deal, as Dr. Terry has pointed out, with the drug addict in the only way possible, that of scientific medicine.

It becomes necessary, according to the degrees of social standing, individual needs, the criminal tendencies of many, to deal with the drug addict. But the treatment must be on the broad lines of scientific determination if we are going to get anywhere and obviate the horrible police methods that are being carried out at present, with, as we know, absolutely no result. We have got to deal with it, and I cannot conceive any body better situated than the American Public Health Association to bring forth the results of investigation in the way suggested.

Dr. Bryce then formally broached the subject of a resolution, and after various parliamentary procedures it was moved and voted that a resolution be formulated and presented to the committee on resolutions, looking to a committee of the A. P. H. A. to make a thorough investigation of the subject of narcotic drug addiction. The resolution as finally worded, and as adopted by the association in general session on September 16, 1920, at San Francisco, Cal., may be found in the JOURNAL for December, 1920, page 989. The committee is to report at the next annual meeting of the association.

One speaker in the discussion concerning the form and membership of the committee, reflected his view of the existing situation in the following words:

"Mr. President, may I make a suggestion for the work of that committee, that they give the poor, unfortunate doctor who wants to do something for these patients and who

is scared to death for fear he will violate the narcotic law, give him some instruction so he will know how he can go to work and help these unfortunate cases. I am called

to the case by a trained nurse—and I am a health officer—and it is difficult to know just how I am going to help her and not run foul of that narcotic law."



SYMPOSIUM ON NARCOTIC DRUG ADDICTION

IV. BRITAIN'S OPIUM POLICY IN INDIA

It is an American missionary, who for thirty-two years has devoted his life to the people of Hindustan, who writes this story. The article has been penned at the request of the JOURNAL so that it can present to its readers a faithful account of opium dispensing in India. The position and reputation of the writer give assurance that he is relating what he has observed and experienced. It is his wish, on account of the circumstances, to present his facts anonymously.

Taraknath Das, Executive Secretary of the Friends of Freedom for India, in an address before the Friends of Irish Freedom said, "The Indian People are harmed by Britain's policy of poisoning them with opium. Britain is drugging the world. In India there are thousands of licensed opium dens."

Statements like this are often made, but it is the truth that the Native States of India have grown poppies from time immemorial. The writer has been in India for the past thirty-two years and during that time has failed to find that opium has in any way injured the people. They have learned through the centuries how to use it without harmful effects. The question is, are the Indian people being harmed by Britain's policy of poisoning them with opium?

The writer has lived in a district comprising 500 square miles with a population of over 100,000 people. In the whole of that district there are only two shops licensed to sell crude opium. Please note that I speak of shops, not dens. Whenever a person requires opium, he must go to the shop that is licensed to sell it, and can only get a very small quantity at a time. Some villagers live more than 50 miles from the nearest opium shop.

The Government of India for many years has controlled the sale of opium and its

derivatives. The registered physicians and people had no cause to complain until about 13 years ago, when drastic rules and regulations came into force. It is quite evident that the Government of India had to yield to the agitation of some reformers, well meaning, but ignorant people who have little understanding of the intense suffering caused by their reforms, to say nothing of the worry and anxiety brought upon physicians in charge of large hospitals, especially those at long distances from drug centers. A doctor could then order only 10 grains of morphia at one time, and this could not be delivered by post, but must be sent by railway parcel. Now, since the writer's hospital was 50 miles from the nearest railway station, the reader can judge of the inconvenience and trouble involved in order to get the necessary drug to carry on a large practice.

Fortunately, through the influence of the leading druggist of Madras City, backed up by physicians, some modifications were made in the rules. Things went on more or less smoothly until about a year ago, when further restrictions were enforced. The said restrictions came into force shortly after the signing of the Peace Treaty. The writer made careful enquiries from the two leading druggists of Madras and they assured him that such rules and restrictions were utterly unnecessary. The fact is the

new scheme became a great burden to both druggists and physicians. One druggist told me that he had to employ a special assistant to keep accounts on a salary of \$150 per month. Numbers of Indian druggists refused to take out licenses for the sale of opium and its derivatives, knowing that it would be impossible to keep within the law and fearing, as they did, the levying of blackmail by those in whose power they would be. Many found it most difficult to carry on hospital practice. For instance, every few months an order would come requesting the doctor to write a statement as to the amount of opium and its derivatives used during the preceding two years, where purchased, and how dispensed.

In the Madras presidency only fully qualified and registered physicians possessing a government license could purchase or prescribe morphia or any of the derivatives of opium. This rule was made more difficult after the Peace Treaty, as even the possession of a license would not allow the physician to possess enough to carry on a

large hospital distant from its drug center without a further application to the Collector or Chief Magistrate of the district, who might live some hundreds of miles from the applicant.

The evidence afforded by the existence of restrictions of this nature and to this extent show beyond question that England's treatment of the inhabitants of India is not "a policy of poisoning them with opium." The mistake and the danger lie in the fact that such regulations do and will prevent the physicians of the country from carrying on their legitimate work for the alleviation of pain and suffering, thus driving the sorrow-stricken victim of disease to suicide or to try some of the various methods of relief, the use of which speak danger or death. Results such as these have followed the enforcement of similar laws and restrictions in those countries in which they are even now in force; laws, the cruel enforcement of which is a stain on the page of our boasted civilization.



SYMPOSIUM ON NARCOTIC DRUG ADDICTION

V. SOME GENERAL FACTS

There is no question about the controversial nature of the narcotic drug addiction situation today in this country. In illustration of this a number of facts are here presented which may outline how widely the "doctors disagree." These facts may be of value to members of the A. P. H. A. as information on a subject of immediate interest.

The Bulletin of the New York Medical Association for October, 1920, carries this statement: "Withdrawal of the Cotillo Bill. Its Objects and Its Sponsors.—Likewise the Cotillo Drug Bill was withdrawn by its introducer, Senator Cotillo, under pressure similarly exerted by the New York Medical Association aided by some of the legal and judicial officers of the City of New York.

"This bill which would have deprived the physicians of this state of the right to

treat cases of drug addiction at any stage of this disease except under institutional restraint was also offered and advocated by the Medical Society of the State of New York. At the Legislative hearing on this promotion the State Society was represented by the chairman of the special committee on the narcotic drug situation of the American Medical Association, and by the official head of the late Narcotic Drug Clinic of the New York Department of Health.

"Also appearing and speaking for this measure was an Assistant United States District Attorney and Attorney of Record in the prosecution of physicians under indictment for alleged violations of the Federal Narcotic Drug Law."

From this it will be seen that the Medical Society of the State of New York and the Special Narcotic Drug Committee of the

American Medical Association appeared in favor of the bill, while it was opposed by the New York Medical Association, which is credited with the presentation of such evidence that Senator Cotillo withdrew the bill.

In outlining its policy of dealing with addicts in the largest experiment of the kind yet made, the Health Department of New York City, in its *Monthly Bulletin* for February, 1920, presents a statement of some 16 pages. It is here asserted that drug addiction is not a mysterious disease and that drug addicts, under careful medical and supervisory nursing, present no pathological condition—only a disturbed or perverted functioning. "It is our opinion," the article goes on to say, "that any form of cure can take an addict off his drug provided this is done promptly. This was done at Riverside Hospital in three to five days without discomfort to patient."

The clinic established in Worth Street, New York City, for temporary care, seems to have been an emergency measure. The city authorities do not regard it as the solution of the problem. It was continued as a clearing house preparing the way for hospital treatment. This subject is again discussed by Dr. Royal S. Copeland, Health Commissioner of New York City, in a reprint from *American Medicine* for January, 1920, in the *Weekly Bulletin* of the Department for February 21, 1920.

At the meeting of the Association in San Francisco, Dr. Copeland was scheduled for a paper before the joint session of the Laboratory, Public Health Administration and Food and Drugs Sections, the announced title of which was "The Ultimate Control of Drug Addiction." Dr. Copeland was detained in New York City by exigencies of home needs, and Dr. W. H. Guilfooy appeared in his place. The address was a brief one and no authorized copy of it has been presented for publication, but it carried a very brief story of the establishment of the drug clinic in New York, the statement that the number of addicts in the city had been grossly overestimated, that the number registered between April, 1919, and June, 1920, was about 7,500, and the suggestion was made that this number represented the total of persons who were using the drugs illegitimately. Dr. Guilfooy believes that addiction

is "simply a vicious habit," according to the stenographic notes of the meeting, "that can be gotten rid of if proper care is taken for the after-hospitalization of the individual." The speaker noted that Commissioner Copeland's recommendation is similar to that of Miss Mulhall as to Federal control.

An interesting development in technical research along the lines of addiction is the paper published by Pellini and Greenfield in the *Archives of Internal Medicine* for September 15, 1920. The authors of this article have drawn conclusions that have been interpreted by them and by others to mean that narcotic drug addiction has no basis in physical fact but is merely a habit of vicious indulgence. Special interest lies in these conclusions since they have been seized upon by certain popular and scientific publications as conclusive. It should be said here that the conclusions are negative, and scientific men in any department of work are usually a little careful in accepting such findings until by repetition they establish themselves as probably true. This position of withholding judgment is here the more desirable in that for many years there has been accumulating a body of data, clinical and experimental, quite at variance with the conclusions of these authors. This, of course, is not to be thrown away on the evidence of a single piece of work.

Within the limits of the publications and proceedings of the American Public Health Association there has been more or less discussion of the question of addiction. It has been a subject of papers presented at three of the annual meetings, discussions at two, and of the reports and action of one of its committees at two of these meetings. The papers by Dr. E. S. Bishop are the following: "Legitimate Use of Narcotics in War Time," appearing in the *Journal* in May, 1919, and "Narcotic Drug Addiction: a Public Health Problem," in the July, 1919, issue. The latter has a bibliography of the subject, and is followed by a brief discussion by Dr. C. E. Terry. In January, 1920, a third paper bears the name of Dr. Bishop, "The Administrative Handling of the Narcotic Addict," and in the present issue there is his discussion in this symposium.

So far as the American Public Health

Association is concerned, its Committee on Habit Forming Drugs rendered a report at the meeting in New Orleans, La., October, 1919, which is printed in the Proceedings of the Association in the Journal for January, 1920, pages 83-86. This report asserts that addiction is a physical condition, that measures to restrict and control the use of narcotic drugs by purely forcible means have failed, and that compulsory registration of addicts "as heretofore tried and in present execution, has failed as yet to demonstrate its usefulness." The committee in its report condemns enforced hospitalization and emphasizes the need for experimental and clinical research and the education of the profession and the laity through all possible channels. To this report four mem-

bers of the committee appended their names, with one member dissenting from most of the opinions contained therein.

As has already been stated, the subject of "Addiction" appeared at a symposium at the meeting in San Francisco; it was the subject of papers and of discussion which are reproduced in the preceding pages, and at the general meeting of September 16, 1920, a Resolution was adopted by the Association (Journal for December, 1920, page 989) which stated the fact of variance of opinion among medical men and health administrators as to the nature of drug addiction and authorized the appointment of a committee to make an investigation of the subject and to report at the annual meeting of the Association in 1921. R.



Diet and Dentition.—At the recent meeting of the American Dietetic Association in New York City, Dr. W. G. Giles discussed the relationships between diet and dentition. He said that perhaps there is no part of the body more prone to disorder in the largest number of people than the teeth. It stands to reason that the diet must have at least an effective relation to the development of the teeth and the development of the jaws. It is not necessary to eat any bony structure in order to provide material that will make bone or teeth, but it is essential that the diet contain a sufficient amount of the calcium, phosphorus, carbon, and other minerals in order that the cells which construct the teeth may have the elements of the molecule they use in construction. Recent studies have shown that certain of the vitamins are necessary for the best formation of the teeth. The diet best adapted for the development of the teeth is the diet which contains mineral constituents and moderate amounts of the vitamins.

Maternity and Infancy Work Support in England.—For the protection of maternity and infancy last year the British Ministry of Health made grants totaling over two and one-half million dollars, according to information received by the Children's Bureau of the United States Department of Labor.

Six years ago the necessity was recognized of providing medical and nursing care for mothers and babies in order to reduce the high death rates. The first year a small appropriation was granted, but the results obtained were so encouraging that the appropriations have been greatly increased each year. The funds are administered by the Ministry of Health in cooperation with local authorities. The local authorities appropriate a sum equal to the amount granted by the government. The service available includes instruction in the hygiene of maternity and infancy, midwifery and maternity nursing, and hospital and maternity home care.

ROLE OF DENTISTRY IN PERSONAL HYGIENE

GUY S. MILLBERRY, D. D. S.,

*University of California College of Dentistry,
San Francisco, Cal.*

Read before session on Personal Hygiene, American Public Health Association, at San Francisco, Cal.,
September 15, 1920.

Food is a first essential to life and conversion into energy comes next. The teeth are machinery necessary to efficient conversion. Care of the teeth is a fundamental essential and to secure proper care there should be school exercises in dental hygiene. Teachers in this and oral hygiene should be in all public schools.

I WISH to preface my remarks by stating two facts; first, the two most important factors in life are food-energy and man-power; second, the conversion of food-energy into man-power depends very largely on the teeth. If, therefore, food energy is to be successfully converted into efficient man-power, the machinery necessary to its conversion must be kept in the best state of preservation and function that is humanly possible.

We are all prone to regard our particular field of human activity as being of greater importance than any other. Perhaps it is because we know less of other men's activities, perhaps because we know more about our own. In the latter instance we must defend our contentions, and this I propose now to do.

If my statement of facts remains undisputed, then the problem of the care of the teeth presents itself for our consideration. It is an individual problem, a personal problem, one that begins with the beginnings of life, for the period of pregnancy is as vital to the development of a perfect dentition as is the pre-adolescent period, if not more so, and we must attack this problem when and where we may expect to produce the best results.

Naturally we turn to the home and the

school, as the social agencies best suited to put into operation the procedures necessary to establish and maintain a clean, healthy mouth and sound teeth.

The home seems to be the logical place for giving instruction to mother's regarding the pre-natal care of the child. Instruction dealing primarily with diet, indicating the essential requirements for building tooth structure may be provided, but in addition to that, the influence of hereditary disease which may produce terrible abnormalities, and the influence of certain psychoses which may produce fear, timidity, and other mental states in later childhood should also be discussed.

To all who have engaged in any phase of public health activity, where the necessity for entering the home is established, the difficulties encountered are well understood. The same rule holds good with regard to teaching the principles of mouth hygiene in the home.

Looking forward, we are finding that our most effective work can be carried on in the schools, even with regard to the pre-natal conditions influencing the growth and development of the teeth, for the schoolgirls of today are the mothers of tomorrow and in many in-

stances they are obtaining more reliable and needful instruction relating to their future maternal responsibilities in the school room than they are in the home.

The teachers in zoölogy, biology and physiology, the public health nurse, and the teacher next to come, the dental hygienist, are the persons to carry these messages into the homes through the schools. Let us therefore see to it that all of the teachers now being trained in universities and normal schools are instructed in the fundamentals of personal hygiene.

The second phase of this subject deals with the school child and quite properly so; first, because under the school laws all children are required to attend school between certain ages, usually from eight to 16, and second, because dental caries, or the decay of the teeth, is essentially a disease of childhood. While it may continue throughout life its period of greatest activity and destructiveness occurs between the ages of four and 16.

Very few individuals or communities regard a child with decayed teeth as unhealthy, yet the best authorities concede that persons with decayed teeth cannot possess good health, and the ravages of disease directly resulting from unclean mouths and diseased teeth are so commonly understood now that further reference to the subject is unnecessary.

What shall we do about this problem?

First, we must inculcate habits of mouth hygiene which will be so thoroughly ingrained in the individual as to be considered more necessary than clean faces or clean hands, because human nature is inclined to be less particular about conditions of living not subject to public view.

Second, the most effective way of carrying on this work is in the school-room, where teachers specially trained to give this instruction both by precept and practice may teach the child, and follow

up the instruction with the same regularity and precision as the other courses of study are followed.

This, the dental hygienist is destined to do. Her work involves oral prophylaxis service to the child as well as general instruction on the care of the mouth and teeth, hands, face, etc. and the individual service requirement demands that she should be placed in our public schools in the ratio of at least one to every 1,000 children.

In addition to this, regular dental service should be provided when needed, either at private or public expense, by qualified dentists. In the larger cities where many thousands of school children are to be found, special teachers whose whole time may be given to instruction in mouth hygiene should be engaged so that the routine service of the operating hygienists may not be interfered with.

Have you ever compared the expenditures made for instruction and equipment in manual training or the vocational fields, in music and the arts, in foreign languages, with the expenditures made for the health of the children? An analysis of school and health budgets might give us some interesting data and encourage us to pursue this phase of public health activity with even more vigor than we have in the past.

The role of dentistry in personal hygiene is important not alone to the individual, but to the public. Dental diseases are preventable in direct ratio to the knowledge of their causes which the people possess and of the measures for prevention, viz., mouth hygiene, which they practice. The most suitable place to carry on this program is in the public schools by persons who are specially trained for this service.

Will the public health authorities respond to the call?

MENTAL HEALTH OF CHILDREN

GLENN E. MYERS, M. D.,
Los Angeles, Cal.

Read before joint meeting of Public Health Administration and Sociological Sections, American Public Health Association, at San Francisco, Cal., September 16, 1920.

The importance of heredity lies chiefly in giving a good physical condition and a normal capacity for intelligence. The basis of the entire future personality is established in infancy or in early childhood. It is the duty of parents to furnish the proper environment, and this is all-important. This author outlines some of the fundamental principles in environment.

IF we knew all about the mental health of children, and if it were possible to apply this knowledge intelligently to all children, from the time of their birth throughout the first few years of their lives, then it would be possible, in the course of a generation or two, to prevent nearly all insanity and to promote the happiness of the individual, the family and the nation, to an almost inestimable degree. For those types of insanity which are the outgrowth of instabilities in the mental make-up, would then practically never occur, and the education of the individual would be such that he would arrange his life intelligently, and meet all difficulties with greater ease, thereby increasing his happiness, through better ability to get along with himself, his family and his world, and incidentally avoiding those physical conditions out of which mental upsets oftentimes develop. These results, in toto, can never be effected, but much can be done toward realizing them, through the education of the public to apply the knowledge that we have of the human mind. This knowledge is limited, through the difficulty of completely analyzing others and ourselves, but much insight has been gained during recent years with better working methods in the study of abnormal psychology.

The opinion of men of experience has been divided about the relative value of

the influence of heredity and environment on the mind. Each, undoubtedly, has its importance. A child comes into the world with a certain capacity for intelligence. The limits of this capacity are absolutely fixed and cannot be increased. So the child, who is born mentally defective, no matter what his opportunities, can never develop the intelligence of a normal adult, in fact can acquire only the knowledge possible to a child, the exact capacity for this knowledge being fairly accurately determinable by means of certain intelligence tests (the Binet-Simon scale and its modifications). The child also inherits certain instincts, about which we have all heard; for example, the instincts having to do with nutrition, self-preservation and sex, but also such instincts as fear, play, imitation, curiosity, etc. Racial traits are transmitted through the parents to the child. To illustrate this, the Jew is a good example. The persecution and suffering of that race through centuries, but also the constitution and ideals of the Hebrew religion, impart to the Jew a special type of personality. He is significantly emotional, and contributes more upsets, due to psychogenic factors, than does any other race. Familiar traits are markedly transmitted. The child shows not only physical, but also mental characteristics of its ancestors. He will be probably most like his father and mother,

but may also be like, for example, a grandparent whom he has never seen. Certainly an instability is inherited from mentally unstable parents, and a tendency to insanity from insane parents. Yet such an inherited tendency need not lead to insanity, any more than the child of tubercular parents need develop tuberculosis, providing the tendency is not too marked and the child grows up with the proper environment.

Nearly everyone knows that he should marry a woman who is healthy mentally and physically, and that he himself should be in good physical and mental health in order to endow his children with stable attributes. It is, however, a difficult problem to govern love affairs, marriage and child-bearing. Cupid is noted for his pranks and love is blind. Previous ideals are liable to be forgotten and serious physical and mental defects are disregarded. If someone with good vision into the future, could only give his advice to a receptive ear, sociological problems would be so much less complex. Certainly it is imperative to educate the public, as rapidly as possible, about the far-reaching dangers of mental and physical defect and disease. It is best to call a spade a spade, and tell them that syphilis, not the less well understood terms "lues" or "specific disease," is the cause of much ill health and unhappiness, that syphilis should have the most exhaustive treatment, and that the person who has contracted it should not marry without the full approval of an experienced physician. For an incurable disease of the brain, *Dementia paralytica*, may develop ten or twenty years after the initial infection with syphilis, and disrupt an otherwise happy home, with the death of a parent at an age which should be his prime, after possibly two or three years' residence in some institution for the insane. The child of syphilitic parents may inherit that disease, or some other form of syphilis, and is very liable to have at least one serious physical or mental defect. The ill effects of alcohol, as a problem of heredity, should wane

with the present prohibition laws. The causes of mental deficiency are not easily avoided, such as the union of mental defectives, and the results of poverty and disease. Mentally defective parents are certain to give birth to mentally defective children, and, if one parent is mentally defective, at least some of the children are liable to be mentally defective. The extent of the mental defect of the children is in fairly definite ratio to the mental defect of the parents. Hasty marriages are liable to be unfortunate. Both parties to a prospective marriage should give the subject careful consideration before the ceremony, rather than regret afterward. In Switzerland, a notice of a proposed marriage is published in the papers, and is posted publicly, for a period of three weeks before the ceremony, with an invitation for anyone to disclose any objectionable features, which may be a part of his knowledge. The ill effects of the marriage of near relatives are well known. There is a popular belief that marriage will cure mental trouble. Every student of abnormal psychology knows how erroneous this impression is. Everything possible must be done to educate the public through the lecture, the motion picture and the dissemination of literature. Undoubtedly the best source of information for a child is in his home, so his parents in one way or another must be informed.

Various propositions have been made about the disposition of mentally defective children. I thoroughly believe in sterilization if the defect is at all marked, and in sterilization and segregation if the make-up of the mentally defective individual is such that he is a menace morally to the community. I do not believe in the general segregation of all mental defectives. If I had a large farm, I should acquire a number of mental-defective workers, who would give me good service under the supervision of an intelligent foreman. For the mental defective is most often a goodnatured fellow, who would give no offense to society in a proper environment. He may be

taught to do simple work well, and may prove to be much more reliable and trustworthy than many of his more intelligent companions. He needs someone to understand him and to protect him from the temptations which, otherwise, he would not resist, owing to his suggestibility and poor judgment. He is exceptionally susceptible to his environment, good or bad, and if his environment is good throughout his childhood and early adult life, his make-up is likely to be such as to make him a passably good citizen. Feeble-mindedness, as one of the causes of prostitution, is rather well known. A problem, which has received much investigation and comment during recent years, is that of the moron, that individual whose intelligence is below the average, yet so high that it is oftentimes not known that he has any mental defect until he comes before an experienced observer. The uninitiated person is apt to judge intelligence by the ability to use words. The moron, as a rule, can carry on a good superficial conversation and, in many instances, his parents do not suspect that their boy has a potential mental defect, until that is found to be the secret of his stealing, running away from home, or getting into trouble in other ways. A moron is not so liable to show these tendencies if his environment has been altogether good, but, like the imbecile, he is suggestible and readily succumbs to the temptations of a bad environment. It is not always easy to weed out a bad environment completely; the motion picture, for example, may lend all the suggestion necessary to send the moron on some excursion of bad judgment, which leads to the police station. There should certainly be a systematic examination, in the public schools, for mental deficiency as well as for physical defects. It is important that a child have his eyes tested, as a refractive error may interfere greatly with his progress, and the nose and the throat should have careful attention in order to eliminate the ill effects of diseased tonsils and adenoids.

But, also, the mentally defective child must be discovered, because one mentally defective pupil will impede the progress of an entire class. There must be special classes for mentally defective children, and these classes should be designated "special classes," in order to call as little attention as possible to the backwardness of the children, as well as to avoid hurting the feelings of oversensitive relatives.

A mistake, so often made by the pessimistic advocates of the importance of heredity, is that they failed to realize that certain traits of the personality, which they had attributed to inheritance, were really not acquired before birth, but were assimilated from the environment during infancy and childhood. And the optimistic, hopeful prospect for the mental health of children must be found mainly in an improvement of that environment. Consider how observant a child is, how soon after its birth it is attracted to objects or occurrences, how impressionable it is. Its activities are at first preponderatingly reflex in character, in other words, they are not consciously directed in any way, but, without special knowledge of psychology, one must recognize that the child's experiences accumulate fast, leading to habit formation and the organization of its mind. Very, very early we acquire the foundation of our future make-up, acquire it and build upon it during the years of childhood, of which, as adults, we have no recollection, or only imperfect, isolated memories. And, if we have been fortunate in the inheritance of a good physique and a good capacity for intelligence, our mental make-up will be the best indicator of our ability to get along with the world. The person who gets along best with the world, is the one who is lively, jolly, sociable, a good mixer with people, is easy to talk to and makes friends readily, is energetic, efficient and, in short, is one who adapts himself well to all situations. A quick temper is a sign of poor adaptation to something or other; it indicates that the

individual is not meeting some situation smoothly. It is true, however, that the provocation is sometimes so great, that anger is a very natural reaction, a natural means of giving way to one's otherwise pent-up feelings in response to some unpleasant condition, and it is not to be regarded as an abnormal symptom if the individual recovers his composure quickly. If, on the other hand, the reaction is all out of proportion to the exciting cause, or if the cause of the anger is not clear, and especially if the individual does not get square with the situation quickly, but if he holds a grudge, is sullen and broods about his wrongs, whether real or imaginary, then one knows that there is an inherent defect, somewhere, in his make-up. Irritability is also a sign of poor adaptation to a situation. It may be due to fatigue, but if chronic and brought out without adequate cause it is to be regarded as abnormal. Worry, depression and elation are to be regarded in the same way. Any one of these symptoms may be, and oftentimes is, combined with the so-called "open make-up" described above.

Let us now consider another type of mental make-up, the "shut-in" type. We usually find that such an individual was described to be a "very good child," that he "never cried" and was "very easy to care for." He was a quiet child, did not play boisterously, was a follower in play rather than a leader, and possibly he preferred to play by himself, had little to say. Later, poor attention and a dreamy attitude were apparent, and he was a poor student in school, liable to be the butt of jokes and to be imposed upon by his more vigorous and active playmates. Still he was thought to be merely lazy. Punishment or coaxing did not relieve the situation; he seemed willing to do better, but apparently lacked the initiative. Still later, he did not care for parties or dances like the other young people, and showed no interest in the opposite sex, or had only half-baked love affairs. When he went to work, he was

inefficient, never got anywhere, lost his jobs and was regarded to be stupid, although an examination by an experienced person may have proven that his capacity for intelligence was normal for his age. All this probably was not recognized by his parents to be ominous until, as a natural sequence, more abnormal mental symptoms appeared. Gradually he began to rationalize his lack of success. He said that he was discriminated against, that he was not treated like the others. He exaggerated real slights and imagined others, and soon began to say that people were talking about him and calling him names, when it was not true. He stayed more and more by himself, in order to avoid this fancied persecution. At the same time, his limited interests in his environment further declined, he became careless about his personal appearance, then untidy, shut out the world in which he found such difficulty to get along, and shut himself into a little world of his own imaginations, in which he heard voices talking to him, and he reacted to them with conduct which he regarded to be normal, but which, by that time, was generally understood by everyone to be abnormal. Taken for examination, it was at once recognized by the experienced physician, that the condition was one of *dementia præcox*, which had been permitted to develop to such a degree, that a cure under the best environment could not be expected.

As will be understood from these remarks, *dementia præcox* is an abnormal mental condition, which is the direct outgrowth of an abnormal type of personality. Both the shut-in make-up and the psychosis are manifestations of poor adaptation to the environment. The patient cannot recover from the psychosis, because he was already unable to meet the world fairly, long before the psychotic signs developed. He started in infancy, or childhood, with bad mental traits, which are believed, by the majority of psychiatrists, to have their

origin from the environment, although it is generally conceded that possibly some organic defect was inherited, which predisposed him to be unfit. It is fairly conclusively proven that not only the psychosis, but even the abnormal make-up, can be avoided by proper handling of the case, at a sufficiently early period. As *dementia præcox* is the most frequent form of mental disorder, and as the majority of these patients become a burden to their relatives or to the State for a half or more of their natural lives, it is of great importance to recognize danger signals early.

An individual with a truly open make-up, would hardly develop a chronic, deteriorating mental disorder like this. If circumstances confronted him of such magnitude that he found it quite impossible for him to meet them in a normal way and he became insane, his upset would be in the nature of an emotional disorder, a depression, or an elation, or a stupor, or an excitement with, perhaps, a few queer ideas, and one could be quite certain that, after a time, he would completely recover his normal mental condition, that he would, in other words, eventually overcome the lack of adaptation of which his insane symptoms were the manifestation. He would be able to overcome them because of his good mental make-up, just as an individual, with a good physique, can readily shake off an infection, which has arisen through the temporary lowering of his powers of resistance.

Sometimes a patient is admitted to a hospital in a profound stupor, which is found to be not of organic origin. Now, there is absolutely no single symptom known, in a stupor of that kind, to aid one in a differential diagnosis between the recoverable condition, manic-depressive psychosis, and the irrecoverable condition, *dementia præcox*. An account of the previous make-up usually clears up this question at once, so that the relatives of the patient can be immediately

informed what to expect. A good history of the previous mental make-up is, then, one of the best aids to the psychiatrist in differential diagnosis and in an estimation of the prognosis.

Amongst other conditions, which depend directly upon peculiarities of the make-up, may be mentioned vagrancy, crime and sex perversions.

The altogether normal person will be able to meet all conditions of life without developing a mental disorder. He will find some adaptation to every situation that arises. Most persons become tired, or irritated, or angry, or worried, or depressed under trying conditions, but manage to pull through. Other persons are able to meet ordinary conditions of life but, owing to an inherent instability in their make-up, they break down when confronted with especially trying conditions. This was uncommonly evident during the war. Many young men, who had found their niche in the world and had occupied it well, were quite unable to adapt themselves to the demands of war, and suffered a breakdown. Mental health, happiness and efficiency, and benefit to the State all depend upon the mental make-up.

Through the study of the abnormal adult as well as through the study of normal and abnormal children, we have fortunately learned much about the development of the mind. The child gets impressions from its environment from the time of birth. These impressions gradually accumulate and form memories. In order to form a memory something must be observed, attention must be given it and it must be associated with other memories. The enormous accumulation of associated memories constitutes the mind. If these memories can be recalled they are a part of the conscious mind, if they cannot be recalled they are a part of the unconscious mind. As nearly all of our experiences are gradually forgotten, in other words, as they become unconscious, our unconscious

mind is by far the most important, as there are stored the impressions which determine our attitude toward life and constitute our make-up. Suppose we get a wrong attitude toward sex, through the accumulation of our impressions about that subject, then we are liable to suffer great unhappiness through our difficulty of adaptation to love affairs, marriage, and all the ramifications of sex as it affects our efficiency and our interests. With the exception of the inheritance of a good physical condition and a good capacity for intelligence, there is perhaps nothing so important to a child as is the gradual development of a normal attitude toward sex. A child should have enough attention, but not too much. It should be left alone the greater portion of that period, during the first few months of its life, when its activities are mostly reflex in character. It should not be mauled about and taken up and put down again and hugged and kissed, but should be permitted to learn the rudiments of regularity and routine in its cradle through regular feeding, regular hours of sleep and gradually regular attention to its other physical wants. Care should be exercised in the selection of a servant girl, who will not manipulate the genitals to make the baby go to sleep or cease crying, as bad sexual habits may have their origin in just that kind of care. Later it is most important that the child have other children to play with, of its own age, and of both sexes. The only child is most liable to develop the shut-in type of make-up, through being over-indulged with the intent of protecting him from the world, but with the effect of making him tender and unfit to meet the world. This is also frequently true, in the case of the child who has been born with some physical defect. Imagine an extreme case of the only child, or of the one who is physically weak, one who has been kept altogether away from association with other children, whose every wish has been granted, who has

had only the best of foods and the most luxurious surroundings, who has been waited upon and petted and pampered, who has had school instruction only at home from tutors, and who, if not actually so taught, has learned to believe himself superior to other children. What kind of citizen would he make, when allowed to come into closer touch with the world? He would have an enormously exaggerated ego, would be highly selfish, would have no understanding of people through lack of experience. If the world rubbed him in any way, he would not know what to do, and under slight stimulus might show the tendencies of a monster, with entire lack of consideration for others. If a child has plenty of other children to play with, he will then have opportunity to exercise those instincts that he has inherited, such as constructiveness and imitation, and to form useful habits. He will learn how to give and take, when to follow and when to lead, and will gain experiences which will stand him in good stead all his life. It is of course best that he play only with children of known good habits, but it is far better for him to have a few bad companions, than for him to be kept altogether away from other children under the fear that they will teach him something undesirable. Questions about sex should never be avoided, but should be answered in a true, straightforward way, telling each time enough to satisfy and to insure a return to the same source for further information. The subject should be dealt with in as impersonal a way as is that of nutrition or finances. The child should not be allowed to gain the impression that the subject entails anything to be ashamed of or concealed, or, on the other hand, to be curious about. Masturbation is so universal in children that it is to be regarded as a normal phase in sexual development, but it should not persist in the adult, as a preferable method of sexual gratification.

The child should not be permitted to gain the idea from quack literature or other sources, that masturbation will lead to insanity, but the habit should be dealt with in a natural way, with adequate explanation. The child should not be allowed to form too marked an attachment to either parent, as is oftentimes the case between father and daughter, and between mother and son. An only child, or a sickly child, is especially prone to form such an attachment. Many a man does not marry because he does not find a woman sufficiently like his mother, and many a woman cannot break away from her father, to go and live with another man as his wife. Generally this principle, as a cause for his conduct, is not at all conscious to the individual, but it operates potentially from his unconscious mind. The frequency of this complex, and its importance in relation to mental disorder, is known to every psychiatrist. An example of such an attachment is well illustrated in the book entitled "Sons and Lovers," by Mr. D. H. Lawrence. To consider the other extreme, a child does not learn to assert himself, if the parent is too severe, but he is liable to grow up submissive and timid. He is also liable to become resentful and sullen, and to hate the parent, and later to hate every parent-substitute, such as the school master, or the head of the firm, and to hate all authority, such as that vested in the government. Again we come back to the principle that a child should gain his experiences chiefly from children of his own age. He should love his parents equally well, and should look to them with respect as a source of information and authority. He should not, however, have too much of their company or the company of persons older than himself, to the exclusion of children. He should run and play with other children, and develop his muscles and his mental activities. If pernicious traits develop, it is well to try to substi-

tute something less harmful rather than present direct opposition. Comparatively little of "Don't this" and "Don't that" constitutes nagging to a child. Better lead and suggest than thrust and oppose. Good team-work by the parents, and consistency of policy, is essential. Certainly the parents must have full control of themselves in the presence of the child, for the child will imitate them and reflect their errors. He can early learn the principles of honor and fairness, and develop those traits known as "gentle." If always treated as courteously as a guest, he will probably grow up to be courteous. The development of his make-up should be closely followed and an effort made to find out what he is best fitted for, then educate him along that line. The problems of the individual lead directly to the problems of society; they are to be studied together.

To recapitulate: It is not within the possibility of this paper to present all the problems affecting the mental health of the child. Let us, however, bear in mind certain principles, that students of abnormal psychology have emphasized. The importance of heredity lies chiefly in a good physical condition, and in a normal capacity for intelligence; for a mental instability of the parents need not continue in the child if the environment is good from time of birth. By good environment, we mean not only proper food and cleanliness, but more specifically the attitude of the parents and other near relatives in relation to the child. The most desirable type of personality is the "open make-up." The only child, or the sickly child, is especially prone to the "shut-in" type of make-up, because its parents are apt to give it too much love, attention and indulgence, at the same time keeping it too much away from contact with the world, and thereby rendering it tender and unfit and interfering with the full development of the personality. Such a child is liable

to form too strong an attachment to a parent, which engenders a poor adaptation to sex, and directly affects its future happiness and efficiency and its usefulness to society. It should be permitted to spend most of its time with other children, of its own age, and of both sexes. Through such association the child develops his instincts and acquires good habits, which will make him a happy man and a useful citizen. Questions about sex should be truthfully answered, without postponement, but telling each time enough to satisfy and to insure a return to the same source for further information. Masturbation is to be regarded as a normal phase of sexual development, but becomes abnormal when it persists, as a preferable

form of sexual gratification, after a time when sexual interest should be transferred to the opposite sex. Do not allow the child to believe that masturbation will lead to insanity. Traits known as "gentle" depend mainly upon the conduct of the parents in the presence of the child, therefore the parents should consistently set the example before the child, of what they are or wish to be. The basis of the entire future personality is formed in infancy and early childhood, and during these years the best effort should be made by the parents to furnish the proper environment. The development of the make-up should be closely followed in order to determine what trend the child's abilities take, and to educate him along that line.



RELATION OF INDUSTRIAL MEDICINE TO PUBLIC HEALTH

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Address of the Chairman to Industrial Hygiene Section, American Public Health Association, at San Francisco, Cal., September 17, 1920.

THE evolution of the science of medicine has been a slow process of selecting facts that were of scientific value and when this knowledge became too extensive for physicians to cope with singly, specialists had to be created. Today, the new public health profession has also advanced to this stage.

In the dark days of its struggles, before infection was understood as it is at present, it was made up of theoretical probabilities. Chapin was a decade in advance of his time in his exposition of modern public health, and his achievement of the practical application of research to the source and mode of infection was a revolution. But is public health to confine its endeavors primarily to infectious diseases or is its aim to

progress to the solution of methods of eradicating degenerative and other non-pathological preventable diseases?

The vital statistician, by the use of comparative observation, has shown that aside from communicable diseases and accidents, the degenerative diseases are the cause of unnecessary illness and early demise. In so far as many of the degenerative diseases are the result of labor, with its element of fatigue and industrial strain, and the environmental surroundings of the worker, such as bad air, poisonous fumes and metals, dusty trades, and high and humid temperature, it behooves the public health official to interest himself in occupational hygiene. If the modern health office is content to continue along the epochal lines of bac-

teriology, epidemiology and statistics, and carry many pseudo health activities as is the present custom, without attacking morbidity and premature mortality, which are the result of the non-infectious and degenerative diseases of industry, then there is no relation between industrial medicine and public health.

Industrial medicine in the past decade has made progress by leaps and bounds in this country, through the scientific efforts of industrial surgeons and hygienists. The work of Hayhurst, Lee, Kober, Winslow, Mock, Hamilton and Schereschewsky and others in the field of industrial hygiene are epoch-making and familiar to members of this section. The medical schools and boards of health in the past seemed to be oblivious to the existence of industrial hygiene and medicine, but fortunately through the efforts of some pioneer industrial physicians, with the vision of preventive medicine, a national organization, the American Industrial Physicians and Surgeons, was formed some five years ago and through its efforts intense interest has been created. Its membership includes the most prominent plant surgeons and hygienists in this country. These investigators, through their exceptional opportunities, have enriched the literature by making distinguished investigations in the study of occupational diseases.

Industrial surgeons are not simply first-aid men, but men of ability and vision who are taking advantage of their opportunities and are combining curative with preventive medicine. They have the social ideals which are characteristic of public health men; they are interested not in the individual alone, but in the community in which they labor. Prevention of illness and early death is their aim, whether from the results of occupation, infection or accidents.

In the large plants this work is being conducted in an excellent manner, and linked up as it is with dispensary and hospital facilities and coöperating with

the safety and employment departments, complete supervision of the health of the plant is maintained. The medical department offers prompt and skillful service to the sick and injured, makes the necessary physical examinations, extends first-aid, and dental care, and maintains the activities of safety and public health nursing.

The sanitation of the plant is the most important part of an industrial surgeon's duty. He is not only an epidemiologist, but a hygienist as well; which places him in the first rank as a sanitarian. The control of communicable diseases and of the infections of industry, of water supply and waste disposal, the supervision of rest rooms, eating places and general welfare work, is a matter of routine. His knowledge of industrial hygiene involves problems that are not usually confronted by the general health officer, viz.: the study and prevention of occupational diseases and the making safe of the environments where the artificer toils. Pure air, water and proper light are the privileges every worker must demand, together with scientific ventilation and control of high heat and humidity, of toxic fumes, gases and dusts, and the overcoming of fatigue, the introduction of the great health activities that tend to reduce degenerative diseases and make the humanizing of industry possible.

In the large plants where the organization and supervision are conducted scientifically and efficiently, it will only be a question of time when the system will be standardized, instead of as now, each plant making its own surveys in its own fashion. The many smaller plants, labor camps and mines are, however, without proper health supervision, it being a physical impossibility to carry on such individual and costly systems, which economically can only be maintained by plants of magnitude.

This is the "no man's land" which can only be conquered with a proper weapon in the hand of a bureau of industrial hy-

giene in federal, state and municipal boards of health. In California the labor camps are surveyed periodically by the California Housing Commission instead of by a bureau of industrial hygiene of the State Board of Health. The same misplacement of a public health activity is found in our federal system where, for example, a Children's Bureau is maintained in the Department of Labor. Surely there must be overlapping and reduplication. If only as a matter of economy, the logical place should be in the United States Public Health Service.

It is the consensus of opinion of members of our profession that all agencies which have any relation to health should be a part of a big machine; a well organized and conducted health department. Such economy and efficiency will increase the health budget by cutting down the overhead now used in reduplication in other commissions and departments.

Some of our states, notably Ohio, Pennsylvania, Massachusetts and New York, have bureaus of industrial hygiene attached to the state board of health and several of our municipal boards of health as, for example, New York and Boston, conduct industrial divisions and occupational clinics.

A few medical schools are at last incorporating industrial clinics in their curriculum, and these provide teaching in this field of industrial medicine. Harvard, Rusk, Cornell, Ohio and Cincinnati give such instruction; while the University of California and Columbia have courses of industrial hygiene in their academic departments. In the past two years two excellent scientific journals have been published in the interest of industrial hygiene and medicine. Many of our medical societies, as well as our public

health associations, have sections devoted to this subject, practically demonstrating its importance.

With a bureau or department of industrial hygiene in every state and municipal health board, factories, mines and labor camps would be surveyed and inspected by properly trained health officials. The reportable occupational diseases would be followed and investigated, health hazards prevented, methods of scoring standardized and periodical inspections conducted. These public health inspectors and nurses should be specially trained experts, socially minded and conscientious in the field of occupational hygiene. Great opportunity awaits them in the newer research in the prevention of occupational hazards and the early recognition of these diseases. The fact that they possess the right of access to plants, to create proper sanitary supervision as well as to enforce the law, should be of secondary importance to the hearty coöperation with the various agencies that are allied in the field such as the industrial surgeons, the plant hospital and clinics, and the employees' and employers' associations. The sympathy and willingness of the worker in this line will be a potent factor in the gradual amelioration of industrial disease conditions and will tend to increase the worker's happiness and longevity.

The question remains, however: has the public health profession adequately met its responsibilities in regard to the conservation of the health of the worker? It is true that communicable diseases have been markedly reduced, but have the degenerative diseases in a field of 40,000,000 workers been proportionately exploited by the relation of public health to industrial medicine?



Three important Symposiums from the San Francisco meeting are scheduled for early numbers of the JOURNAL this year—Smallpox and Health Centers and Students Health.

BACTERIOLOGICAL METHODS OF WATER ANALYSIS USED IN THE AMERICAN EXPEDITIONARY FORCE

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The responsibility for the purity of the drinking water furnished the American Expeditionary Forces was divided between the Engineering Department and the Medical Department. The Engineers were responsible for the water furnished in wholesale quantities at water points, and the Medical Department was responsible for the water furnished in smaller quantities as it was taken from the water points or from wells not under the control of the engineers. For the purpose of quality control of the water furnished by the engineers, men skilled in water chemistry and water bacteriology and usually holding commissions in the Sanitary Corps were attached to the Engineers for duty. They made up the personnel of the Water Analysis Laboratories, which were to a certain extent under the technical supervision of the Director of Laboratories, Medical Department, American Expeditionary Forces. Their duties included making sanitary surveys and analyses of water supplies from the Base Ports to the trenches, and the supervision of the sterilization and purification of the supplies that needed treatment.

This work required standard analytical methods. These methods of determining potability had to conform to several requirements not always met with in civilian practice.

1. They had to be of such a character that results could be obtained in the shortest possible time.

2. They had to be of such nature that a minimum of equipment would be needed. The mobile laboratories used in the army areas contained a limited amount of apparatus and materials in order to make them as easily transportable as possible. The stationary laboratories, too, in the service of supplies, were badly handicapped on account of lack of supplies.

3. They had to be of sufficient detail to make possible a sound opinion concerning the water. Every available supply had to be used, so that a good water could not be condemned. On the other hand, every supply of water furnished to the troops was to

be of unquestionable purity and a bad water could not be passed. It was necessary, therefore, that an interpretation should not be in error in either direction.

4. Methods should be of such a character that results could be comparable with results obtained by our allies, especially the French, who had surveyed much of the territory covered by our troops. In addition to the methods for bacteriological and sanitary chemical analysis, methods of analysis for the mineral content of the waters were prepared under the direction of the Senior Sanitary Corps officer-in-charge of this work. These methods were published in pamphlet form by the Bureau of Medical Publications of the American Red Cross Society in France. This bulletin was called *Bulletin on Water Analysis Adapted for Use in the Water Analysis Laboratories of the American Expeditionary Forces*.

Bacteriological methods and standards were adapted from *Standard Methods of Water Analyses, of the A. P. H. A., Medical War Manual No. 6, entitled Laboratory Methods of the U. S. Army*, and the *Standards* set by the United States Treasury Department for *Water to be used on Interstate Carriers*.

Special instructions concerning the interpretation of results were given, and we quote that part applying to interpretations which had to be given with the shortest possible delay:

- "I. The sanitary surroundings, the bacteriological condition, and the chemical condition shall be considered in giving an opinion concerning the quality of a water.

- "II. Whenever there is need for quick results, a water may at the end of 24 hours be reported UNSAFE WITHOUT TREATMENT:

- "1. If sanitary condition as described in the report of the collecting officer are unfavorable;

- "2. If the number of bacteria growing on agar at 37° C. exceeds 100 cc;

- "3. If more than one of five 10 cc. portions show gas in lactose broth, and coliform colonies appear on Endo medium;

"4. If chemical condition is unsatisfactory.

"III. The interpretation of the bacteriological quality of water has been based upon the standard adopted by the U. S. Treasury Department for waters used on common carriers in interstate commerce."

"In some of the chemical methods limits have been stated to indicate a dividing line between safe and unsafe water. The difficulty or even the impossibility of doing this correctly and satisfactorily may be recognized at the outset. Too much emphasis therefore should not be laid on these limits.

"It is essential to make sure that every supply of water for troops is safe to drink. If the quality of any supply is doubtful, it is easy to treat the water and thus assure its safety. In making the interpretation and report a water should be considered **SAFE TO DRINK WITHOUT TREATMENT** only if all the important factors of the analysis are obviously within safe limits. For the purpose of the American Expeditionary Forces, all waters of which this is not true should be reported **UNSAFE TO DRINK WITHOUT TREATMENT.**"



INFANT WELFARE HEALTH STATIONS IN BRIDGEPORT, CONN.

In this city there is considerable variety offered in the way of Community Centers. Some are chiefly health centers, others chiefly sociological investigation headquarters and others purely recreational. All are desirable and eventually will probably have representation in the standardized Community Centers.

In Bridgeport we have a Community Center in our Welfare Building, but it is our District Health Center work for babies and the preschool child that I desire to outline at this time. Our aim in this work is *Prevention of illness*. By the method of periodic examination of babies and small children and the comparison of their weights and heights at regular intervals, we believe an index of their growth and nutrition can be kept.

The babies are weighed at regular intervals, which vary in individual cases from twice a week to every two weeks, depending upon the baby's condition. Each particular baby's diet, sleep, exercise, dress, habits, bowel regularity, etc., is discussed with the mother by the physician and outline procedure given to her. If the baby is bottle-fed and needs a proper modification of milk, this is outlined by the physician, and the nurse demonstrates to the mother its preparation in the home until the mother is able properly to prepare the formula herself. Emphasis is laid upon proper washing and sterilization of the diaper. It is a well known fact that a large number of

deaths under one year of age are due to enteritis and diarrhea, and it has been demonstrated by Levy of Virginia that the rate of enteritis can be lowered (and the infant mortality rate also thereby) by proper instruction by the nurse in the home, on the sterilization and washing of the diaper. "A high infant mortality rate in these days is more of a disgrace to a community than a high typhoid rate," and it is our belief in Bridgeport that the Infant Welfare Health Station, with a proper follow-up system of instruction and demonstration in the homes by Public Health Nurses, especially trained, is the best weapon we have at this time for the saving of infant lives.

Pre-natal work will be conducted in the Health Stations in conjunction with the pre-natal clinic in the Welfare Building. In the Health Station the mother can have her blood pressure taken and a urinalysis made at regular intervals. She may also discuss with the physicians any symptoms. All other necessary examinations are made in the examination rooms of the pre-natal clinic in the Welfare Building. Pre-natal follow-up is conducted in connection with the infant welfare follow-up and by the same nurse, to prevent duplication in effort.

The health poster which properly illustrates the vital points concerning the child's welfare can be used with good effect, particularly in a cosmopolitan city like Bridgeport. Literature briefly outlining "Care of the Child," etc., is used. This literature is

translated into the various languages peculiar to each community. The impression of the writer is that the posters are better than the literature. Health rule cards are used for mothers to remind them of the basic principles which underlie the child's health. Interest in the regular attendance of the preschool child at stated intervals for examination is stimulated by the reward system, which in this case is in the form of a "Child Health Alphabet" booklet which is attractively illustrated and appeals to the children.

The Health Station as conducted in Bridgeport accomplishes the following things in addition to its primary aim, which is preservation of health:

1. The many unrecorded births have been discovered and the births have been officially registered. The importance of this is little understood by the average layman.

2. Handicapping physical defects are discovered and corrected in their earliest stages, before secondary defects appear.

3. Systematic arrangement of the household and affairs is outlined by the nurse in

her visits, which results in a lightening of the duties of home management, arduous when unsystematically conducted.

4. Confidence is established in the Department of Health's efforts to aid taxpayers of the city.

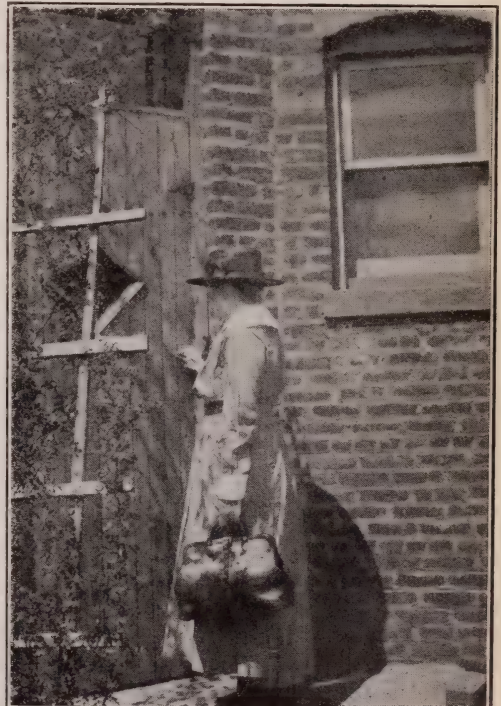
5. General educational value of a home visit along the lines of health, Americanization, coöperation and administration of affairs which results from the home investigations of the nurse cannot be measured. The movement for an establishment of a district health center is growing rapidly. The old saying that "To know a person one must live with him" is being acted upon with excellent results, in the establishment of these stations. The results obtained in Bridgeport have been extremely satisfactory. Within one year the department has been compelled to double the number of its health stations to accommodate the constantly increasing demands.

As in all successful work, a well-trained corps of workers is essential.—LEROY A. WILKES, M. D., *Director of Child Hygiene, Bridgeport, Conn.*

Will She Be Welcome?

City and state officials, especially those of the older schools, have occasionally been heard to say, "No public health nurse for us. No one has any business to poking about into people's houses." Is the nurse really welcome? A little group of pictures furnished to the JOURNAL by Florence Swift Wright, R. N., may serve to throw some light on the question.

Here is the nurse in the act of tapping at the door of an humble residence. It is a rough batten door betokening only moderate circumstances, while the care of the trellis and the vine indicate that here is not real poverty. It is a class that is particularly hard to care for. The care of the vine means perhaps a tenant of foreign birth. These people are not infrequently suspicious of intrusion by people of other races, especially those who have a foreign air. The question, "Will she be welcome?" is a very pertinent one. A later picture will answer this.



EDITORIAL SECTION

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POPULAR HEALTH OPINION IN CALIFORNIA

The result of the vote on the four constitutional amendments having a bearing on health matters was very gratifying and was something of a surprise as the work of the opposing forces had been so thorough and so well financed that it was thought there was great danger of passing some of the measures which were inimical to public health progress.

The result in the case of Amendment No. 5, which was not strictly a health measure, was of interest as indicating the trend of popular opinion concerning medical standards. This measure provided for the creation of a separate examining board for chiropractors. Under the present medical practice act drugless practitioners are licensed by a mixed board, the educational requirements being the same for all schools. This, however, did not suit the chiropractors who desired their own board in order that they might be licensed without any such annoying qualifications as a preliminary education. This measure was defeated by a 23,000 majority out of a total vote cast of about 700,000.

Amendment No. 6 prohibited compulsory vaccination or medication of any sort as a prerequisite to attendance in any school, or for public employment. The anti-vaccinationists, the Christian Scientists, the so-called School Protective League, and all other organizations of antis worked vigorously for the passage of this amendment and from the thoroughness of their work and the nature of the arguments used, there is no question that the majority of voters believed that they were voting on the subject of compulsory vaccination, which was not strictly the case, because California has no compulsory vaccination law. The outcome of the vote on this amendment is therefore particularly cheering, as it was defeated by a majority of 100,000 out of a total vote cast of something over 700,000.

Amendment No. 7, which prohibited vivisection, and which was drawn in such broad terms that it would have suppressed entirely all forms of animal experimentation and the use of animals in routine laboratory diagnostic procedures, was defeated by a two to one vote which also speaks well for the intelligence of the average citizen when confronted with the necessity of deciding such important questions.

No. 8 was a referendum from an act which had been passed by the legislature strengthening the state poison law and making more rigid the control of the sale of narcotic drugs. It was opposed by the osteopaths principally, as it prohibited the use of hypodermic syringes by any excepting physicians licensed to prescribe drugs. This measure was carried by a majority in excess of 200,000 votes.

W. H. K.

NEED OF REVISION OF PLUMBING REGULATIONS

Under State Legislation Notes in this issue (page 85) the JOURNAL presents in abstract the report of the Special Plumbing Board, which in all probability will be the basis of better plumbing legislation in Massachusetts. Incidental to the preparation of this report there were developed some matters of interest to health officers everywhere, since it is very often within their province that the plumbing regulations fall.

It has happened here as in so many other lines of administration in this country with its progressive citizens possessing initiative, that the same problems have been attacked from different standpoints by different individuals or bodies without a real knowledge of what had been undertaken elsewhere. Within ten miles of the State House in Boston the cities and towns have five different authorities—or lack of authority—to formulate their plumbing regulations. Big cities are cared for by special legislative acts; a fair share of the other cities and towns refer their plumbing regulations to the local board of health; while some are under a state examiner. Intermingled with these are communities where the rules are promulgated by the building department, while the majority of towns, the great majority when the whole state is considered, have no well defined plumbing regulations whatsoever.

Then again curious anomalies have arisen. It is a fact that in general the water supply within a building is not a part of the regulated plumbing. It is not subject to the same inspection as the drainage pipes, and may in no wise conform with the great supply, the meter or the drainage. One can hardly credit it that such conditions exist, but it is possible to have supply pipes within the building that will "rush" the meter or others that will fail to furnish an adequate supply for proper flushing. Hot water systems, likewise, are not always in proper conformity with the water supply. For so important a matter as the water supply in a house it would seem as if some method akin to that of the gas companies might be employed, in which a supply is not turned on until the tests are satisfactory.

One difficulty under present conditions is that the laws or regulations are not equally enforced. Law-abiding citizens are practically fined by being put to the cost of good installation, and although the less conscientious may be reported, nothing is done, and they are permitted their installation at minimum expense to themselves.

Another difficulty has been the inflexibility of classification. There can be no question about the country house, the city house, the "three decker" and the vast office building presenting conditions different each from the others. A single grouping of them all is therefore unphilosophical. One of the important suggestions of the report is therefore that classes of buildings be established with standard minimum specifications for each class. There is further the possibility of framing a standard code of regulations for cities and towns which have either a public water supply or a public sewerage system.

We have passed through a period of inflation with high costs and reminders of the latter are likely to remain with us for some time to come.

It is in the interests of economy that a standard minimum code would work, and for that additional reason early attention to the legislative basis for any new systems should be given.

SYMPOSIUM OF NARCOTIC DRUG ADDICTION

At the San Francisco meeting of the American Public Health Association in September, a symposium on Narcotic Drug Addiction was presented. So fully as it has been possible to collect the papers read in this symposium they appear in this issue of the JOURNAL. There is one matter in this connection not touched upon in these papers, which it is important to discuss with them, namely, to what extent is a physician justified in prescribing for his patients what in his judgment is the treatment suited to their cases. This matter, so far as narcotic drugs are concerned, is brought into prominence by the arrest of Dr. E. S. Bishop by the Federal authorities for violation of the Harrison Drug Act.

The discussion of this question will serve to let light in upon an important health problem which till today has received very little real scientific consideration. It is a fact that in comparison with human maladies which are comparable with it in importance, drug addiction has been studied only in a minor way. It has had no real place in standard medical education and there are lacking completely any broad-minded researches on the subject in the laboratories of this country's great institutions. The opinion that has been accepted, not only by the layman but by many of the medical profession, is that drug addiction is merely a bad habit, and that it is to be cured by breaking off the habit.

Dr. Bishop stands as the most prominent advocate in the country of the belief that narcotic drug addiction is a disease. In this belief he is by no means alone, but has the support of other physicians of excellent reputation. His arguments, based on his belief, are that addicts are sick men in need of medical treatment and not mental and moral degenerates. He has treated the few of his patients who have manifested the clinical symptoms of the disease according to his best judgment of their medical needs. He has done this openly and in such a way that his motives might not be misunderstood.

In this whole matter there is evidently a subject whereon doctors disagree.

Dr. Bishop has spoken and written in the missionary spirit and has voiced his beliefs in no uncertain fashion. In his papers and his lectures he has constantly called attention to the fundamental fact of the existence of an "addiction disease." He notes in some detail its clinical symptoms and outlines its treatment. If he is worthy of credence, he is pointing facts not lightly to be brushed aside.

In his consideration of the Harrison law, he finds it "in its purpose and drafting a wise piece of legislation," but its administration is largely in the hands of lay officials. He emphasizes the fact that under the conditions of administration, with the prevalent notion that addiction is a vicious habit, the general practitioner of medicine is "unwilling to receive the narcotic addict as a patient," and indeed the sincere physician is "in constant uncertainty as to the meanings and possible interpretations and administrations of the laws." He has indeed apparently here forecast his own position, that of a reputable and skillful physician prescribing for his patients according to his best medical judgment, yet held on the interpretation of a law.

The well known character of the man, his skill as a physician, his acknowledged position as an authority on drug addiction and the evident absence of motives of gain or desire for concealment, make of his case a test case for a fundamental principle.

SYMPOSIUM ON SANITARY CONDITIONS IN PERU

In continuing its series of articles dealing with the sanitary conditions in Greater America, the JOURNAL is fortunate this month in being able to present what is practically a symposium of these conditions in Peru. Dr. Henry Hanson, a Boston man, after extended experience in Panama, was appointed Director of the Sanitary Commission for the Eradication of Yellow Fever from the Republic of Peru, and has been engaged in this undertaking for the past year. He outlines conditions as they are, and health officers know what his descriptions mean and how improvements are to be effected.

Philip Ainsworth Means, also a native of Boston, needs no introduction to scientific men. Always a traveler, he was a member of the Yale Peruvian Expedition of 1914-1915, and collected and observed for the Smithsonian Institution in Peru in 1918-1919. His work has been the study of the archæology, sociology and economic history of that country. He has recently been in coöperation with his friend, Dr. Hanson, and carried on last year through publicity a campaign of public education with reference to yellow fever. At the present time, in addition to his matters of research, he is trying to instill into the people of Peru the principles of hygiene and sanitation through his relationships with the local press, a step towards that overcoming of present conditions of thought to which he refers in his article as essential to reform. The close relationships between social conditions and public health betterment which are emphasized by Mr. Means are fundamental, and Peru is not the only country to be improved by attention to them.

CORRECTIONS

In his article on "Endemic Goiter as a Public Health Problem," published in the JOURNAL for July, 1919, Mr. Mayo Tolman states that: "There are endemic centers on every continent. In North America parts of New Hampshire, New York, the Blue Ridge Mountains of Virginia, practically the entire state of West Virginia, the region around the Great Lakes and Edmonton, Canada, constitute the main goiter areas."

To this statement F. H. Whitelaw, M.D., Medical Officer of Health of Edmonton takes exceptions. As the result of some correspondence Mr. Tolman in a series of "Additional Notes" to his original title set forth in the May, 1920, JOURNAL, page 434, quoted from the correspondence, which made it evident that a Dr. Ritchie of Cochrane had issued some statements with reference to goiter in Alberta, statements which the Alberta Medical Association at its meeting in Calgary in 1918 held to be unscientific and not in accordance with the facts. Mr. Tolman further made note of the fact that his original source of the statement with reference to Edmonton could not be located, but that in a Mineralogical Bulletin published in Massachusetts in 1884, there is a statement that the city is located in a goiterous area.

In a continuation of the correspondence Dr. Whitelaw proves a good "alibi" for Edmonton in the matter. He writes: "For the information of your readers I wish to say that at that time, Edmonton, Alberta, whose present population is 70,000, did not exist except as a remote fur-trading frontier post of the Hudson Bay Company, and that in the whole Province of Alberta, which now has a population of 500,000, there were probably not enough white people to make a respectable sized village.

"There is, I believe, a place called Edmonton in the state of Kentucky, also an Edmonton, a suburb of London, England, and now included in the area of the greater metropolis, made famous in the old poem of John Gilpin. Is it possible that the Edmonton referred to in the Bulletin of 1884, mentioned by Mr. Tolman was either one of these Edmontons?

"In any case the number of deaths recorded under the vital statistics of Alberta from goiter in 1918 was 5, or one per hundred thousand of our population, which should dispose effectually of the theory that the disease is more than ordinarily prevalent here."

Dr. Whitelaw certainly proves his case.

With reference to plague in Newfoundland, Dr. R. A. Brehm, M.D., Medical Health Officer, St. Johns, N. F., writes: "My attention has been drawn to the fact that the statement was made in an article by Dr. W. H. Kellogg, published in your November issue, that several cases of plague had been reported recently in Newfoundland. This statement has evidently been made under some misapprehension, as, so far as I am aware, no case of plague has ever occurred in this country."



BOOKS AND REPORTS REVIEWED

An Epitome of Hydrotherapy for Physicians, Architects and Nurses. *Simon Baruch, M.D., LL.D. Philadelphia: W. B. Saunders Company. Pp. 205. Price, \$2.00 net. 1920.*

Dr. Baruch has summarized in this small handbook of about two hundred pages his experiences with hydrotherapy. Through most of the book there is a discussion of baths, but in the introduction Dr. Baruch mentions the various uses of water as a stimulant, a sedative, a tonic, a diuretic, a diaphoretic, an emetic, a purgative, an antipyretic, a hypnotic, and so on. He emphasizes the need of paying minute attention to details for the successful application of all hydriatric procedures, and in a rather complete chapter on hydriatric installment he writes of the tendency of architects to install hydrotherapeutic apparatus incorrectly. He mentions some faulty constructions which were the "product of the highest type of architects."

One of the newer hydrotherapeutic procedures about which he has had no experience himself but which was used quite widely during the war with very excellent results were the whirlpool baths for stimulation of circulation in the extremities.

The main chapters of the book take up the actual technique of hydrotherapy such as the use of affusions, the sheet bath, the wet pack, the wet compress, the cold friction bath, sedative bath, hammock bath, and the carbon dioxide bath. Another long chapter is concerned with the adaptation of these procedures to various diseases such

as typhoid fever, pneumonia, neurasthenia and influenza. He insists on errors committed generally by medical men, two of the more important being the use of the ice bath in sun stroke, and the use of the ice bag as a local application to abort inflammatory processes or to check internal hemorrhage. The ice bag for such purposes is delusive; as a local anesthetic the ice bag has been found useful, however. He compares the mortality in sunstroke in different hospitals in New York in which different hydrotherapeutic procedures are used; he states that at the St. Vincent Hospital the hammock bath with cold water forcibly dashed on the patient was much more effective than the ice bath used elsewhere, the mortality with the use of the hammock bath being 6%, while the mortality with the use of the ice bath being 33%. In his discussion of acute infectious diseases such as pneumonia and influenza it would seem that Dr. Baruch is somewhat too enthusiastic about the cure resulting from hydrotherapy. On the whole this epitome should be read by all who resort to hydrotherapeutic procedures.

PAUL DUDLEY WHITE, M. D.



The Opium Monopoly. *Ellen N. LaMotte. New York: Macmillan Company, 1920. P. 84.*

Not the problem of the individual addict but the effect on the world of the British maintenance of the opium monopoly, is the concern of this author in an argument directed at the evil existing in the Far East. The facts and figures are from offi-

cial British sources and are presumably authentic. The volume is therefore of interest to health officers in this country who have today and will have in the future the problem of dealing with narcotic addicts.

With government reports and official statistics as a basis, supplemented by personal investigations on a trip through Far Eastern countries, the author points out that it is because of the British policy of encouraging cultivators to plant their lands with poppies by lending them money free of interest, under the sole condition that they sell their crops to the Government, that India is the greatest source of opium. She shows further that the monthly sales of government-manufactured opium at Calcutta constitute a grave danger to all countries, for it is sold to highest bidders and distributed by them in their own fashion throughout the world. A large amount of it goes to the British dependencies of Singapore, Hongkong, Mauritius, the Straits Settlements and Federated Malay States, British North Borneo, British Guiana, and the independent but "protected" kingdom of Siam. The traffic is openly encouraged in these subject states for the sake of the revenue arising from duties, excise taxes, and licenses of shops and dens. Official statistics are quoted showing that the opium monopoly furnished one-third of Hongkong's revenue, one-half of that of the Straits Settlements, while the drug was fourth on the list of India's revenue sources.

With the termination in 1917 of the British-Chinese bargain to loose China from the bonds of narcotic addiction by simultaneous diminution of internal poppy cultivation and of drug importation from India, a large market was withdrawn from British traders. Since opium has been so profitable a commodity not only to traders but to government administrators, the author interprets this fact as an added menace to the rest of the world, for other markets will be sought and new victims created—and not alone in Oriental subject countries, but by increased attention to smuggling in America.

The book is a warning to America to profit by the examples offered by opium-addicted countries, and a plea to cleanse the world from the stain of exploitation of unfortunate people by a highly respected and admired government. M. F. S.

Physiology and Biochemistry in Modern Medicine. J. J. R. Macleod, M.D., *Professor of Physiology in the University of Toronto, Canada.* Assisted by Roy G. Pearce, M.D., A. C. Redfield, M.D., and M. B. Taylor, M.D., and by others. *Third revised edition.* St. Louis, Mo.: C. V. Mosby Company. Pp. 985. Price, \$10.00.

This is the third edition within three years, a very notable achievement of which the author may well be proud. If success was ever rightly deserved it was in this case. Before the time of the publication of this book the practitioner had to go to the physiology; now physiology has come to him. The medical man who has always worshiped at the shrine of pathology will be surprised to learn how much practical information he can get from a study of physiology in the form in which it is presented by the author.

In the present edition the section of the nervous system has been rewritten entirely. In the chapter pertaining to the chemistry of respiration, account is taken of the recent clinical application of the subject. Some of the new chapters deal with the principles of ventilation, with the capillary circulation, with the measurement of the functional capacity of the heart, the vitamins and surgical shock. Several new figures and tables have been added. Many of the diagrams and illustrations are entirely original. Many changes covering the most recent addition to the literature, are noted in the discussion of the "Endocrine Organs." The text is divided into nine parts which are further subdivided into a total of 104 chapters. The modern concept of physical chemistry is adhered to throughout the book, forming one of its most attractive features. A liberal list of references is found at the end of each "Part." It would be an injustice to the medical profession not to plead very strongly for an intimate acquaintance with this invaluable contribution to the literature. ARTHUR LEDERER, M. D.



Annotated Subject Index and Order List of Books and Pamphlets, Including Government Reports, on Maternity and Child Welfare in England and Scotland. Washington D. C.: American Red Cross, National Headquarters. 1920.

All who are engaged in the efforts to

promote child and maternity hygiene and welfare will welcome the fund of information placed at their disposal by the American Red Cross through this index. It is a well-printed pamphlet of 184 pages, of which 169 are devoted to the subject index proper. This main section is followed by 8 pages giving a list of publications quoted in the accompanying index, and the pamphlet ends with 3 pages constituting an "index of main subjects."

The wealth of material here indexed is a reflection of the vast amount of constructive work for maternity and child welfare that has been carried on in England and Scotland in the past few years, for practically all of these reports deal with activities developed during the past ten years, and many of them with ideas arising out of war necessities. There is much here for the American to study with profit, for be it recorded to our shame, much of the work described in the reports here indexed is far in advance of that carried on in this country, for example, maternity aid grants. Methods which have satisfactorily been employed in England are still regarded as too socialistic or paternalistic by uninformed critics here, and so in many sections of this country we have almost no maternity or child hygiene activities to speak of, and the lives of mothers and infants continue to be sacrificed needlessly.

With a vast amount of important health legislation either pending or under consideration for introduction in various State Legislatures and Congress, a handy reference book such as the annotated index here reviewed will prove of inestimable value. The reviewer regrets the omission of the compiler's name, for the work has been so well done that this deserves mention.

C. F. BOLDUAN, M. D.

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Traveling Publicity Campaigns. *Mary Swain Routzahn. Russell Sage Foundation, New York, 1920. Pp. 151; 19 illus. Price, \$1.50.*

The hand organ and the peddler have no difficulty in collecting audiences, and appreciative ones at that. The stage driver and the itinerant trader have been bearers of news. The modern development of this kind of work is the traveling publicity campaign. The spokesmen in these are salesmen who bring to your attention not

merchandise but the interest of better citizenship and health. In a country like this with the ease of transportation and travel on the part of everyone so important a factor in our lives, the traveling publicity campaign fits into our civilization very well.

This little book reviews the activities of the new kind of educational work. The method of traveling has advanced from the wagon of the peddler to the public health railway car, and from the train to the motor truck. Until one has read this little book he cannot have realized the extent, the variety, and the activity of the new movement for spreading the gospel of good health. More than a hundred such educational exhibits are described, many of them in the interests of food conservation agricultural methods, but with an important group of "health trains." Of these it was an ambitious one that Dr. Dowling established in Louisiana, of four cars, including an exhibit car, a laboratory car with a garage compartment for carrying a supplementary Ford automobile, and two cars for administrative and living quarters. Readers of the JOURNAL have been made more or less familiar with the healthmobiles which have brought the principles and practice of hygiene and sanitation and medical attention into districts distant from railway centers.

Exhibits, lectures, and motion pictures have been methods employed for education, while dispensaries and clinics have been made available for the resident in the sparsely settled rural district. House boats, motor trucks, motorcycles, and trolley cars have been impressed into this business, while in Vermont the good work has been taken up with the old-fashioned horse and wagon.

Accounts of some typical traveling campaigns are combined with suggestions on the various factors that enter into the success of an educational tour. The book is plentifully illustrated with photographs showing how some of the trains and trucks are fitted up with displays and equipment for demonstrations. Some of the technical problems of arranging and displaying exhibits to advantage in car interiors are pointed out and illustrated. The importance of good advance work in arousing interest in the coming of the train or truck is discussed in some detail. The program of events of each stop, the planning of

itineraries and finally the follow-up work to make sure that results are obtained are all given a considerable amount of space.

The two chief advantages of the educational tour as a publicity method are seen to be, first, in bringing before scattered audiences (often at the end of the road in rural districts) well-equipped speakers and good graphic material otherwise prohibitively expensive; and, second, the news interest attendant upon the visit of the train or motor car to a town. This form of publicity cannot, of course, be well applied in campaigns which require the dissemination of information over large reaches of territory at practically the same time; but it is undoubtedly the quickest way of displaying the same objects to a number of communities.



Text Book of Home Nursing.

The latest bulletin of the State Board of Health of Virginia is a complete text book on home nursing, prepared by the head of the nursing bureau, Mrs. Croxton. It gives in simple terms a complete course of elementary instruction in nursing, a subject particularly important at present in view of the shortage of doctors and of nurses throughout Virginia.

There are chapters dealing with the sick room and its equipment, taking temperatures, giving baths and other toilet information, care of patients, doctor's orders, use of hot water bags, ice bags, plasters, etc., collection of specimens for examination, fevers, chills, hysteria and delirium, nourishment, communicable diseases, cleanliness, particular rules for mothers, care of infants and feeding, medicines, first aid and other topics.

Although prepared primarily for a text book for high school students, it will be useful also in mother's clubs, and other associations of women, and for public health associations. It may be secured at the price of 15 cents a copy on application to the State Board of Health, Richmond, Va.



The *American Journal of Hygiene* is the newest announcement of periodicals devoted to health. It will bear the imprint of Johns Hopkins University, Baltimore, and will be edited by two authorities who are offi-

cially connected with the School of Hygiene and Public Health, William H. Welch, M. D., and Charles E. Simon, M. D. The editorial board includes a score of the most important names in the country in research and instructional work in this department. The Journal will be supported by the DeLamar Fund of the University. A minimum of six numbers a year, making up a volume of about 600 pages, is promised, the initial number to be issued this month. The subscription price will be \$6 a volume for the United States, Mexico and Cuba; \$6.25 for Canada, and \$6.50 for other countries. The results of investigations of unusual length will take the form of supplementary monographs which will be sold separately at prices varying with the numbers.

The purposes of the magazine are thus stated: "The *American Journal of Hygiene* will be devoted solely to the publication of papers representing the results of original investigations in the domain of hygiene, using the term in the broadest sense, to cover all applications of the mathematical, physical, chemical, medical and biological sciences to the problems of person and public hygiene."



American Journal of Obstetrics and Gynecology. *St. Louis: C. V. Mosby Company. Monthly. Price, \$6.00.*

This new medical magazine takes the place of the *American Journal of Obstetrics and Diseases of Children*, which was discontinued in February of last year. The editor is George W. Kosmak, M.D.; associate editor, Hugo Ehrenfest, M.D., and there is a strong editorial board of nearly 35 members. The Journal represents the American Gynecological Society, the American Association of Obstetricians and Gynecologists, and the Obstetrical Societies of New York, Philadelphia, Brooklyn. A very interesting list of special papers is indicated for early publication.



With its January issue, the Hospital Service Quarterly becomes a monthly. Dr. E. G. Stillman is in the editorial chair, and N. F. Cummings, R. N., is managing editor. It is published under the auspices of the Hospital Social Service Association, 19 West 72d street, New York City.

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Help-wanted announcements will be carried free in this column until further notice. Copy goes to the printer on the 10th of each month for publication on the 20th. Mail to Boston office as early as possible.

In answering keyed advertisements, please mail replies separately to editorial office in Boston, Mass. In replying give age, professional training, salary requirements, previous positions held and three or more references.

Wanted: Full time, thoroughly competent, medical health officer, progressive Illinois city, salary to start \$5,000. Good organization. Address Dr. C. St. Clair Drake, State Director of Health, Springfield, Ill.

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Position - wanted announcements will henceforth be carried in this column. The charge is \$2 per insertion. Copy should be received at this office by the 10th of the month.

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✦

Wanted: Position as Health Officer of city of 30,000 or over. Have had eighteen years' experience and am at present in a similar position. Am a chemist and bacteriologist but wish to make a change. References furnished. \$3,500 expected. Address 141, B. J., care of this Journal, Boston address.



CONVENTIONS, CONFERENCES, MEETINGS

January 11, Denver, Colo.—Colorado Tuberculosis Association.

January 11, ———, Nebr.—Nebraska State Association of Nurses.

January 17-21, Atlantic City, N. J.—National Cannery Association.

January 26-27, Lewiston, Maine.—Maine State Nurses' Association.

January 26-27, Indianapolis, Ind.—Indiana Tuberculosis Association.

January 27, Boston, Mass.—Massachusetts Association of Boards of Health.

February 1, New York City—New York Tuberculosis Association.

February 1-3, Toronto.—Engineering Institute of Canada.

February 24-26, Atlantic City, N. J.—American School Hygiene Association.

March 7-9, Chicago, Ill.—Association of American Medical Colleges.

March 7-9, Chicago, Ill.—Congress on Medical Education and Licensure.

March 7-9, Chicago, Ill.—Federation of State Medical Boards of the U. S.

March 7-10, Chicago, Ill.—Midwinter Conference of the American Medical Association.

June 6-10, Boston, Mass.—American Medical Association.

PUBLIC HEALTH NOTES

Abstracts by D. GREENBERG, M. P. HORWOOD, JAMES A. TOBEY and HOMER N. CALVER.

The Campaign Against Infant Mortality.

—Much has been accomplished towards diminishing the infant death rates in communities all over the country. The city of New York, which is but one example of many that could be quoted, has reduced its infant mortality rate in 30 years from 227 to 92. The success in the campaign against infant deaths has in a large measure been due to the diminution of deaths from diarrhea and enteritis. Such causes of infant deaths as malnutrition, premature birth, congenital debility and injuries at birth have not been diminished at all, or have been reduced but very slightly. The next step, therefore, points to more thorough and extensive pre-natal care. Thus, through prenatal clinics, Boston has been able to reduce the ratio of still births to living births to 1.0 per cent among those who attend the clinics; whereas the same ratio for the population at large is 3.4. Similarly, the mortality of infants in the first two weeks of life has been reduced to 11.9 per cent, as compared with 34.2 per cent for the entire population.

Notice is given that the Association for the Study and Prevention of Infant Mortality has changed its name to the American Child Hygiene Association and that the first issue of its new monthly magazine, called *Mother and Child* appeared in June, 1920.—C.-E. A. Winslow, *Modern Medicine*, September, 1920 (M. P. H.).



Suggestions For a Community Hospital Program.

—In order to forestall sickness wherever possible, and to provide adequate hospital facilities for those who need them, the following program is suggested. 1. A diagnostic clinic should be established at one or more hospitals. 2. Hospitals for the acutely sick, with out-patient treatment clinics, should be established. 3. There should also be a home for chronic and incurable cases. 4. There should also be a country home for convalescents and for those on the verge of physical or mental breakdown. 5. Finally, a home visiting diagnostic and

treatment service work in close coöperation with the diagnostic clinic and the hospital out-patient department should be established. The time is coming in the opinion of the author, when hospitals will be supported by the community and not by popular subscriptions or drives for funds.—Dr. Carl E. McCombs, *Modern Hospital*, October, 1920.. (M. P. H.)



Half Million Cattle Tested for Tuberculosis.

—On April 10, 1920, 25,793 herds scattered throughout the United States, with a total of 537,240 cattle, were under the coöperative supervision of the Department of Agriculture and State veterinarians. There were 2,230 accredited herds—60,237 cattle known to be free from the plague. More than 115,000 cattle were on the waiting list to be tested as soon as the veterinarians can work with them. Still another lot of 258,331 cattle have passed through the first stage of the test without showing any dangerous symptoms. The least optimistic estimate indicates that two-thirds of this number will conclude the test satisfactorily, and add 170,000 cattle to the accredited column.—(J. A. T.)



Rural Sanitation Demonstration at Ellenville, N. Y.

—In order to promote the introduction of satisfactory sanitary conveniences on the farms of Sullivan and Ulster Counties, N. Y., the Jewish Agricultural and Industrial Aid Society has established a comprehensive exhibit at its headquarters at Ellenville. Among other things, the exhibit contains a sanitary well, with walls showing the upper part set in concrete; with a concrete cover, and with proper soil grading. There is also a model of a septic tank built of concrete, and showing the method of subsoil irrigation. Another model shows a double cesspool. There are also privies of the box and can type, and another that is model for a shower bath for farm establishments is also shown, and finally there is a model of a garbage incinerator.—Dr. Edward Goodwin, *New York Health News*, August, 1920. (M. P. H.)

Nutrition Work Among Children.—Almost every public health worker is now familiar with Dr. E. V. McCollum's classic work in nutrition, which showed that our diets which consisted of meats, cereals and fleshy vegetables, were deficient in growth promoting and health giving foods such as milk and milk products, eggs and the leafy vegetables. In order to demonstrate the validity of his experimental evidence, Dr. McCollum first divided 84 children at an orphan asylum into two equal groups, one of which was fed on the old institutional diet of cereals, peas, beans, potatoes, fleshy roots and meat, and the other on the same diet, but with a small portion of it replaced by a quart of milk each day for each child, made up from a good quality milk powder. In the first group, after a year's observation, only one child showed any appreciable gain in weight, whereas in the second group that received the milk, many children gained 50% or more in weight in eight months, and one boy of six, who weighed 28 pounds at the beginning of the demonstration, gained 70% in weight and 70% in height during the eight months. Later 8,000 children of the Baltimore schools were weighed and measured. Between 20 and 30% of these children were found to be 10% or more below the normal weight and most of the children who were deficient in this way were badly deficient. Each of these children was then given a thorough medical examination and a campaign was launched to educate the mothers in the proper way of feeding children. Many obstacles due to ignorance, poverty and custom were encountered that made progress very slow. Dr. McCollum believes that the greatest progress can be made through the aid of public health nurses and that the complete physical record of each child should follow the child through its school career, and should be studied systematically and intelligently. He believes that fruits are necessary for a complete diet, inasmuch as they are one of the very few groups of foods consumed raw, and because they contain anti-neuritic properties. About half the money which is being spent for meats should be used to buy more milk.—Dr. E. V. McCollum, *Public Health Nurse*, July, 1920. (M. P. H.)

Home Care vs. Institutional Care of Children.—In a symposium on the advantages of home over institutional care of children, Dr. Miner C. Hill said that hospital care for surgical conditions and many medical conditions was, and always would be essential. But a great many medical cases now treated in the hospital ward could be more successfully cared for in the home. Prolonged hospital care is bad for the baby, does not educate the mother and is expensive. In neighborhoods where there is no hospital it would seem practical to have a small receiving ward in connection with a health center. Here each acute case could be observed for a day or two, during which time the laboratory work could be done, and the baby could then be returned to its home or assigned to a boarding home.

Dr. H. D. Chapin, who has had the widest opportunity for observation and experiment with the boarding-out problem, said that a carefully selected foster home was for the normal child the best substitute for the natural home. He quoted the resolution adopted at the international conference of Red Cross workers held at Cannes as follows: "Permanent institutional care for infants and young children should be discouraged on account of the almost insuperable difficulties in maintaining nutrition in infancy under these conditions and because of the great susceptibility of young children to infection. Preference should be given to placing such children in suitable families."

Dr. Chapin described the operation of the Speedwell System which he has been supervising since 1902. The system is operated under a unit plan. A unit is a neighborhood selected after a survey has been made to learn the general conditions of healthfulness and the number of good homes that might be available in the locality. There is then inaugurated a constant oversight especially as to diet and hygiene, on the part of a salaried physician familiar with this class of cases. The work is kept up during the whole year and not limited to certain seasons. The experience thus far has shown that it is a mistake to be too fastidious in selecting homes. If the woman of the household has motherly instincts and fairly healthy children of her own, and seems fairly teachable, a certain amount of

dirt and disorder could be overlooked at the start.

In comparing the results of institutional care with systematic boarding out, it will be found that both mortality and morbidity is less under the latter plan. If the large institutions would sell their large expensive plants and use the money in intensive human service, in paying doctors and nurses, and with more generous treatment of foster mothers, this problem would be in the way of solution. A few small plants could serve as collecting stations, which would be all that is necessary from the institutional standpoint when operating this form of regulated boarding-out.—*Archives of Pediatrics*, September, 1920, 562. (D. G.)

A Vocational School for Tuberculosis.—

A vocational school has been established in the Chicago Municipal Sanatorium since 1918. The vocations are limited to the ones requiring but little exertion, such as tailoring, dressmaking, dietetics, barbering and beauty culture, and for those who are better prepared, pharmacy, photography and X-Ray work. The members of the attending staff decide when a patient is suitable for work. They supervise the training and determine the number of daily work hours, as well as the suitability of the patient for the particular vocation. Seven months is the average stay of the early cases, hence the time is ample for learning a trade. While at the institution the occupation tends to counteract the depression that is so apt to arise under the circumstances. Upon discharge the patient is better prepared to maintain the acquired resistance. Even the advanced cases are trained and are thus spared an existence of utter uselessness. The children receive regular school instruction. The various departments of the institution are utilized as places for training, such as the pharmacy, power house, X-Ray laboratory, garden, etc.—J. D. Robertson, *Amer. Jour. Clin. Med.*, May, 1920, 309. (D. G.)

Sanitation of Schoolhouses.—In its issue of November 19 the American Legion Weekly urges its readers to "give a thought to the schoolhouse." The sub-head of the article runs: "Better textbooks and improved curricula mean little as long as poor

ventilation and unsanitary conditions exist." In this connection the article calls attention to the fact that the school environment is a large factor in the physical and mental well-being of the child. If the school building, ventilation, desk space, lighting, heating and general facilities should conform with the demands that comfort and hygiene make, they will have their direct effect not only on physical and mental but even on moral well-being of the child. The article goes on to call attention to the great difference in educational work between the little red schoolhouse and the elaborate scientific structures that exist in some of the cities, "yet so complete is the lack of standards in the matter of education," the article states, "that the little red schoolhouse, with all its limitations, exists equally today with the most modernly equipped educational institutions."

The article outlines some of the benefits that scientific knowledge has conferred on some of the schoolhouses, the importance of illumination, the problem of supplying air, the question of sanitation; but regrets that these standards are ignored alike in the schools of cities and of country districts. There are 12,000,000 children in the cities of the United States, and it is a part of the business of the Government to provide for their sanitary needs quite as much as it is to provide for educational needs.

Clothing for Europe.—Five hundred thousand suits of re-conditioned underwear and one hundred thousand pairs of rubber gloves have been given by the American Red Cross to the League of Red Cross societies, which is directing a campaign against typhus throughout Central Europe. The estimated value of the material contributed by the A. R. C. is \$650,000. Investigators for the League who are working in sections in which typhus was rampant during the last year, report the immediate need of materials and supplies that will be used toward the removal of insanitary conditions which are contributive toward the rapid spread of the disease.

Particularly in Poland where typhus had its strongest foothold is there reported danger of a recurrence on a larger scale than last winter when many thousands fell prey to the disease.—J. A. T.

Eyestrain in Motion Picture Theaters.—In a report on possible causes of eyestrain in motion picture theaters and the best means of removing them, made by a joint committee including representatives of the British Ophthalmologists, the Illuminating Engineering Society and the Physiological Society, the following points are noted:

Chief place was given to the question of proximity of seats to the screen, and on this, the committee make a definite pronouncement to the effect that the angle of elevation subtended at the eye of a person seated in the front row between a horizontal line and one running to the top edge of the picture should be not greater than 35° . This angular measurement was considered the best way to express such composite factors as size of picture, elevation of screen, distance away and so on, and also the angle stated was found to be one which did not cause visual discomfort through the sustained effort of raising the eyes to view a high picture. On similar grounds, the lateral angle of view was recommended to be limited to 25° . In the other direction, the maximum distance from the screen of the farthest seats should be not more than twelve times the height of the picture, that is to say, the angle of view should not be less than 5° , but on this point, the committee do not make a definite recommendation as in no case was the suggested limit found to be exceeded. Among the other questions considered were "flicker," imperfections of the film and mechanical defects, nature and brightness of the screen, permissible amount of general light in the hall, portable outfits for use in schools, and a number of cognate subsidiary questions. Two kinds of flicker were distinguished, a physiological flicker due to alternations of light and dark accentuated by strong contrasts in the picture and more apparent at the periphery of the retina, and flicker due to disintegration of the separate pictures which is most noticeable near the screen. Other conditions which produce disturbance of vision are scratches and tears in the film, worn sprocket holes, instability of the projecting apparatus and faulty manipulation, but on these points the committee did not see their way to set up a criterion by which to condemn the exhibition at any particular hall. In the matter of bright-

ness of picture, much depends upon the quality of the screen. A semi-polished aluminum screen was found to give the brightest picture for those directly in front, but this advantage is counteracted by the serious diminution of light when viewed from the side seats. On the whole, the committee were disposed to favour a dead-white screen as being the best for common use. As to general illumination of the hall, the committee is satisfied that the present regulation requiring an intensity of not less than $1/40$ th of a foot-candle is reasonable and not such as to prejudice the picture on the screen, but they think it would be an advantage to graduate the lighting so that the back of the hall should be better illuminated than the front part which derives a fair amount of reflected light from the screen. This method of graduated lighting would be a great convenience to people coming in from the bright outdoor light and it would not interfere with a proper view of the picture being shown; of course, no unshaded source of light should be visible by an observer looking towards the screen. —*Medical Officer*, Sept. 25, 1920, 133. (D. G.)



As Others See Us.—In the matter of Public Health Administration we, in this country, are sometimes prone to look to England for guidance. It is with some little satisfaction, therefore, to note that in some respect we excel and that England looks to us. The leadership of America in business advertising has long been acknowledged, regarding public health advertising. *The Medical Officer* has this to say of us, "We must frankly admit, however, that our American colleagues have set an example to the world in their propaganda and other services for the purpose of educating the general public." This encomium may be of some comfort to us when we feel, as we do sometimes, that our vast amount of health literature is bringing but a slight return on the effort expended in its preparation and distribution. This appreciation of American methods is primarily due to Professor Sedgwick's lectures at Cambridge this summer and the American public health profession was particularly fortunate in having such an able envoy to represent them before their colleagues in Great Britain.—*Edit., Medical Officer*, Sept. 18, 1920. H. N. C.

Vaccine Therapy by the Digestive Tract.—For ten years or more typhoid fever has been treated in France by subcutaneous or intravenous injection of typhoid vaccine. This therapeutic method is not however without danger of producing shock. But no such results are to be feared if the vaccine is administered by way of the digestive tract. Courmont and Rochaix have advised using the vaccine in the form of an enema. This is impractical during the course of the fever especially if there is diarrhea. Lumière and Chevrotier proposed to dry the vaccine and administer it by way of the mouth in the form of keratinoid capsules. These men, however, dealt with relatively weak doses whereas it was by administering each day 0.25 to 0.50 g of dried material that Fournière successfully treated typhoid fever in 1914. He used a culture emulsified in a small volume of water, heated for 15 minutes at 100° C. then for 5 minutes at 105° C.

Recent observation of 150 cases published by Fournière and Schwartz noted in every case a favorable result in this treatment when applied at the beginning of the fever and before any grave complication had set in. All symptoms were reduced in 48 hours and the usual length of the course of the disease was shortened.

Further researches will, without doubt, permit an improvement in the method of treatment by vaccine therapy. The happy idea of Fournière of immunizing the sick by giving massive doses of microbes by way of the mouth probably can be used to profit in the treatment of other infections. *Rev. Scientifique*, Oct. 23, 1920. (H. N. C.)



Domestic Animals As Factors in the Spread of Infection.—The relation of bovine mastitis to human disease is a very important one. The chronic form of mastitis is usually due to the tubercle bacillus or less commonly to actinomycosis. Probably the average prevalence is about one percent. This is the most important source of tubercle bacilli in milk and a potential cause of human tuberculosis. Of the acute variety of mastitis about 70% is due to streptococci, about 16% to staphylococci and the remainder of doubtful bacteriology. The streptococcus mastiditis which morphologically and culturally resembles the pathogenic streptococci of man, differs from the

latter in not being pathogenic. It has been definitely shown that the strains of streptococci of bovine mastitis which are dangerous to man are hemolytic while the streptococci of ordinary bovine mastitis are non-hemolytic. These streptococci gain access from an infection from the milker, whose hands are contaminated perhaps from a sore throat.

Concerning food poisoning outbreaks and domestic animals we may accept it as definitely established that all or almost all the outbreaks involving groups of persons are due to infection of the food eaten with members of a particular group of bacilli, the Gærtner group, the infecting bacilli being either *B. enteriditis*, *B. suisstifer*, or *B. artrycke*. The actual source of infection of the food is, in the majority of cases, not *intra vitam* from infected animals, but through secondary infection of sound food. In a minority but still a very considerable portion, it is due to infection of the living animal with one of these bacilli.

In connection with the question of the secondary infection of food the importance of rats and mice must not be overlooked, since these animals are frequently infected with Gærtner group bacilli, and such infected animals or those who have recovered and still harbor the bacilli may act as vehicle of infection.

Concerning the relation of diphtheria and cats, an extensive series of experiments conducted by the author justify the opinion that the common and widely accepted view that cats can suffer from a naturally acquired disease caused by the diphtheria bacillus is entirely without foundation. The reported cases of such an association are based upon insufficient examination and differentiation of the bacilli found, due to a failure to realize that a large proportion of healthy, normal cats contain in their throats bacilli which closely resemble, and are difficult to distinguish from the true *B. diphtheria*.—W. G. Savage, *Medical Officer*, Oct. 30, 1920 (D. G.)



Child Welfare and Landlords.—It would be an amazing sight to see a landlord in these days of a housing shortage, passionately hunting for a family with five children to come and deign to rent one of his lodgings. This is the attitude to which

landlords would be driven in France, however, should the reasoning of Dr. Bertillon prevail on the legislators concerned with the provision of lodgings for large families. Certain of these legislators, well intentioned, have made some utopian proposition. They have proposed to exact a fine from those landlords so ill-natured as to refuse to rent to families having children. Although such a law might assuage the feelings of the parents it would be impracticable of application for a landlord cannot be forced to tell his reason for not renting. However, should the legislator approach the problem as Dr. Bertillon suggests the same results would follow. He would say to the landlords in effect: Your house contains twenty lodgings, it would be normal therefore if it contained 40 minor children. If it does not contain them then it is because you have refused them. By doing that you injure France to your own profit and you owe her reparation. Should the legislator take this attitude one might even see the extraordinary sight of a landlord with a house which should contain 40 children and in fact contained only 35 offering free rent to a family with five children in order to complete his quota and thus be spared a tax. Review, L' Assistance Educative, October, 1920. (H. N. C.)

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Tobacco Smoke as a Mouth Disinfectant.—Professor V. Puntoni, of the University of Rome, has undertaken some experiments with the object of ascertaining the real action of tobacco smoke as a disinfectant under conditions similar to those which exist in the oral cavity. The results of these experiments are interesting. In the first place, it was found that the strikingly disinfectant power that tobacco smoke exercised *in vitro* did not occur to the same extent in the mouth of the smoker, and the most that could be said was that a bactericidal action was only shown to follow the consumption of very large quantities of tobacco, and then only on the micro-organisms of least resistance, such as the meningococcus and cholera vibrio. It is not admissible that microbes having the resistance of *B. typhosus* or greater can be killed in the mouth by tobacco smoke, and it is absurd to think that the bactericidal action of the smoke could manifest itself in the

respiratory tract as a sequel to inhalation. The smoke of tobacco completely decolorised by filtration through compressed cotton-wool retained a marked bactericidal action, notwithstanding the loss of all the nicotine and tar products, which are the two elements possessing definite disinfecting power. The bactericidal substances contained in this decolorized smoke are soluble in water, one of them being capable of distillation at 100° C. and identical with formaldehyde; the other not capable of distillation was pyrrol, the bactericidal action of which as a component of tobacco smoke, and hitherto unknown, is important. The disinfectant action of tobacco smoke, is, however, due to the activity of many elements, among which may be enumerated with certainty, tar products, nicotine, formaldehyde, and pyrrol.—*Lancet*, Oct. 30, 1920. (D. G.)

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Cost of Venereal Disease in the Army.—It cost the United States Army not less than \$15,000,000 for venereal diseases during 1919, according to a report in the *Medico-Military Review* for November 1, 1920. This estimate is based on a loss by soldiers of 1,923,420 days, practically all of which time represents hospital treatment at about \$7.00 a day. There is also to be added the cost of salvarsan, exact figures for which are not available. The loss due to the effort in time and money expended in training men who subsequently become non-effective because of venereal disease and are discharged is substantial but can not be definitely measured in dollars. The cost of prophylactic treatment is also considerable, but not measurable. The report states that while special efforts have been made to combat these diseases, and there has been an appreciable measure of success, the situation, in many respects, is still far from satisfactory.—*J. A. T.*

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Diagnostic Difficulties in Tuberculosis.—Physicians everywhere recognize the difficulties in diagnosing the early stages of tuberculosis. The difficulty had been stated 400 years ago by Machiavelli, "In its beginnings the disease is easy to cure but difficult to recognize, but when it continues unrecognized and untreated it becomes easy to recognize but difficult to cure."—*D. G.*

STATE HEALTH NOTES— LEGISLATION

National.—From the office of Senator McCormick of Illinois, there has been given to the press the draft of his proposed bill, which aims to make various changes in the great governmental departments in Washington. It is proposed to abolish the Department of the Interior, and set up instead a Department of Public Works and a Department of Public Welfare. In connection with this a goodly number of transfers and changes in the departments are suggested. Of especial interest to health officers is the proposed group of agencies which would be included in the Department of Public Welfare. This would be made up in general by the following transfers:

(a) From Department of Interior—Office of Indian Affairs, Indian Service, Bureau of Pensions, Bureau of Education, St. Elizabeth's Hospital, Howard University, Freedmen's Hospital, Board of Indian Commissioners, which is abolished by the bill.

(b) From Department of Treasury—Bureau of War Risk Insurance, Office of the Surgeon General, Public Health Service.

(c) From Department of Labor—Children's Bureau. Women's Bureau.

(d) United States Employees' Compensation Commission—(Abolished and its functions transferred to Bureau of Pensions).

(e) Federal Board of Vocational Education—(Abolished and its functions transferred to Department of Public Welfare).

(f) Interdepartmental Social Hygiene Board—(Abolished and its functions transferred to Public Health Service).

(g) National Home for Disabled Volunteer Soldiers.

(h) Columbia Institution for the Deaf.

To give an idea of some other important changes which this proposed bill contemplates, it may be said that the new Department of Public Works would include the Geological Survey, Bureau of Mines, Reclamation Service, National Park Service and others from the Department of the Interior; the Bureau of Public Roads, and Forest Service from the Department of Agriculture; The Commission of Fine Arts; and various boards of engineers, road commissioners, and public buildings commis-

sioners now administered by the Department of War.

To the Department of Commerce would be transferred the Weather Bureau, now in the Department of Agriculture; the Patent Office, now in the Department of the Interior; the Coast Guard, now in the Department of the Treasury; the Lake Survey Office and Inland and Coastwise Service, now in the Department of War; and the Hydrographic Office and Naval Observatory, now in the Department of the Navy.



Press reports from Washington suggest that the Sheppard-Towner bill stands a better chance of passage today than at any time since it was introduced two years ago. It is said that President-elect Harding looks upon it with favor, and it has the support of an increasing number of Senators and Congressmen in response to the influence of many national and state organizations.

The bill aims at the public protection of maternity and infancy, and provides a method of coöperation between the Government of the United States and the several states. In this work a Federal Board of Maternal and Infant Hygiene is created, which shall coöperate with the states, provide instruction in the hygiene of maternity and infancy, and make such studies, investigations, and reports as may be deemed necessary.

This bill will provide for a permanent appropriation of \$480,000 each year, \$10,000 to be paid annually to each state, provided that Congress will appropriate for the same purpose additional sums of money running from \$2,000,000 in 1921 to \$4,000,000 in 1926, and maintaining the sum last named thereafter. These appropriations are to be apportioned among the state in ratio to their population, but no payment to any state is to be made unless an equal sum has been appropriated for the coöperative work for that year by its legislature.

The personnel of the Federal Board of Maternal and Infant Hygiene is to include the Secretary of Labor (Chairman), the Chief of the Children's Bureau (Executive Officer), the Surgeon General of the United States Public Health Service, and the United States Commissioner of Education.

The bill requires an organization on the part of the states for the administration in

coöperation in the work, outlines an administration for the Federal Board, provides for popular, non-technical instruction in the hygiene of maternity, infancy, and related subject in the various states, together with certain legal conditions and limitations with reference to expenditure of funds and distribution of unexpended balances.

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On December 7, 1920, Mr. Kenyon introduced into the Senate Bill S. 4543, which was read twice and referred to the Committee on Education and Labor. This bill proposes to establish a Department of Social Welfare. It provides that there shall be at the seat of government a department with this name and a Secretary of Social Welfare who shall be the head of it, appointed by the President by and with the consent of the Senate, with a salary of \$12,000 per annum, and with tenure of office like that of the heads of other executive departments.

After a section providing for the administration, the purpose of the new department is set forth: That it shall be the province of this department to safeguard and promote the social welfare of the people of the country, and to this end it shall be vested with jurisdiction and control of various branches of the public service. These include the Public Health Service Hygienic Laboratory, to be transferred from the Department of the Treasury; the Bureau of Education, transferred from the Department of the Interior; the Children's Bureau, Women's Bureau, and Bureau of Industrial Housing and Transportation, from the Department of Labor; together with the United States Employment Service, the United States Employees' Compensation Commission, and the Office of Home Economics.

Various provisions are made, giving the Secretary power and authority to rearrange or consolidate any of the statistical bureaus transferred to his office, and to publish such statistical information as may seem to him desirable. The Secretary of Social Welfare is to report annually to Congress.

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California.—The four health amendments in California were defeated, the vote being 2-1 against the anti-vivisectionists. Compulsory vaccination as a requisite for entrance to the State University was also de-

feated. The narcotic amendment limiting the use of hypodermics and narcotics to regular medicine was upheld. The bill for a separate board of examiners for chiropractors was defeated.

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Connecticut.—The case of the New Haven Dairy Company vs. The Milk Regulation Board of the State of Connecticut came up before Judge Webb of the Superior Court for New Haven County at New Haven, on November 9th, and continued until November 18th. It is felt by the authorities that the rules and regulations for the pasteurization of milk adopted by the Milk Board of March 3, 1920, will be upheld.

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Massachusetts.—In 1918, at the request of the Massachusetts State Association of Master Plumbers, the Commissioner of Public Health appointed a Board to consider the formulation of uniform state plumbing laws. This Board consisted of the following members: Professor George C. Whipple, representing the Public Health Council of the Department of Public Health of Massachusetts; James C. Coffey of Worcester, representing the State Examiners of Plumbers; Thomas M. Wilson, Inspector Building Department, Boston, representing the New England Association of Plumbing Inspectors; Edward C. Kelly of Boston, representing the Massachusetts State Association of Master Plumbers; and Patrick J. Osborne, representing the Massachusetts Association of Journeymen Plumbers. The principal related factors being represented by this Committee, it has considered the question of plumbing with great thoroughness, having held 30 meetings at which the present situation and desirable improvements in it were discussed. As a result there has been published the report of the Special Plumbing Board to the Commissioner recently issued from the press.

In the conclusions and recommendations, there are certain aspects of the plumbing problem which are of interest not only to the citizens of the Commonwealth of Massachusetts but to those of all the states in the Union. Certain of the recommendations will probably be presented for enactment into law by the General Board of 1921. Health officers know more or less regarding the situation, but there has not been as-

sembled before such a complete discussion of the subject nor such an exposition of the heterogeneous fashion in which the plumbing regulations have been made and administered.

The present plumbing regulations were the result of the great sanitary awakening of the middle of the last century. This developed the use of running water, increased the use of water in the home, and facilitated the disposal of human wastes originating within dwellings. It was an enormous step forward towards making houses healthful and comfortable. At that time the world had become aware of a relation between filth and disease, but had not yet learned that it is the bacteria in filth that causes disease and not the filth itself. Sewer gas was regarded as a poison and the cause of various diseases and took an exaggerated place in the treatment of plumbing. The regulations of today are an inheritance from a previous generation. Sanitary science has advanced, and plumbing regulations should be revised in accordance with the modern idea of preventive medicine. The only sound procedure here is to build on existing foundations in the light of present knowledge.

There have been changes in social conditions that have altered the status of the plumber in the community. Cities have grown to such size that the personal relations between the plumber and householder have practically disappeared. There have been changes in materials, and lead pipe, which gave the plumber his name, has been largely replaced by iron, steel and brass, with screw fittings. Factory-made tanks, ready to use, replace the ones which the plumber formerly constructed in his shop, so that his workman has become, to a considerable extent, an assembler of parts rather than an original constructor. In spite of this, however, the principles of house drainage remain, and it is necessary for him to be conversant with these.

There are changes in business conditions; such, for example, as the growth of manufacturing corporations which sell their product all over the country. These make it difficult for a city to establish and maintain its own standard of materials. The old regulations have been outgrown not only because of new ideas in sanitation but because of new ideas in business.

There are improvements in public water supply conditions which introduce new problems—that of corrosion, for example; while there is now a tendency to work with higher pressures than formerly. Then there is greater installation of meters for domestic as well as manufacturing services. The increase in the use of running water in small towns as well as in cities makes the problem of local disposal of greater importance than ever before. There are also some changes in the technique of sewage handling, such as the separation of the surface drainage or storm water from that of the houses.

There is advancing public health education which tends to increase the demand for water for washing and bathing purposes. Personal cleanliness is taught in schools and is coming to be regarded as one of the elements of self-respect. This means that proper facilities for using water must be provided. There are other modern ideas, such, for example, as the well-designed bubbler, which makes greater demand for the supply of water and necessitates means for disposing of it.

In the face of this increasing modern demand for water supply, and disposal, the control of plumbing is administered in haphazard fashion. In the large cities and in about 46 towns of Massachusetts there are plumbing regulations which require that master plumbers and journeymen must be examined and licensed. There is a policy of regulation which consists in setting up minimum requirements. This, however, differs very greatly in different parts of the state. In 260 towns there are no regulations whatever, and in them anybody can work at the business of plumbing. In these towns no permits are required to do specific plumbing work. Inspection is a function of the local board of health or the local building department. Licenses, permits, regulations, and inspections invariably go together, a town adopting all or none.

The Special Plumbing Board makes suggestions with reference to these items which it is hoped presently to crystallize into a bill. The principle which will probably be upheld is to throw greater responsibility upon the master plumber and less dependence upon the combination of journeyman and inspector. For reasons like this, permits would be issued to the master plumber,

and the quality of the work well guarded by minimum requirements for installations.

The regulation of plumbing design is a scientific matter. The conditions are the same in one town as in another, so that there is no need of the great variety of regulations that exist. It is true, however, that buildings differ, and the regulations applicable to one type of building may not be appropriate for other types. The single cottage presents one problem; apartment houses of several stories another; the office building still another; and the schoolhouse and factory have yet different problems. In the opinion of this Board the laws regulating plumbing should be more elastic but they should be relatively uniform throughout the state for the same style of structure.

Balancing the existing conditions, the needs of communities, and the practical and scientific requirements, the Board is about to suggest five fundamental principles in a modern plumbing code for Massachusetts:

1. That the licensing of master plumbers and journeymen be compulsory throughout the State.
2. That minimum plumbing regulations for buildings of different classes be established and made uniform throughout the State; that these be mandatory for cities and large towns, but permissive for small towns.
3. That the permit and inspection systems be mandatory for cities and large towns, but permissive for small towns.
4. That permits be granted only to master plumbers.
5. That the installation of water piping systems which convey water to fixtures be regarded as plumbing work and subject to supervision and inspection the same as the drainage system.



Michigan.—One of the steps taken in Michigan towards cutting down the number of outbreaks of disease through control of the carriers, is a regulation of the State Board of Health recently adopted. "Any carrier," according to this regulation, "of a dangerous communicable disease that under the rules and regulations of the Michigan Department of Health is subject to quarantine or isolation, shall be isolated or quarantined as provided in said rules and

regulations, and shall not be permitted to attend any school, church, theatre, or other public assemblage, or otherwise come into contact with the public." The term "carrier" applies to any personal harboring the virulent organisms of a communicable disease. Though the carrier may not be sick himself he may spread the organisms which may be the cause of severe epidemics.



New Mexico.—An important suit testing the powers of the State Department of Health is now on appeal in the Supreme Court of the State. Under the law, the State Department of Health has the power of approval of appointment of county and municipal health officers; in case local health authorities fail to carry out the provisions of the health laws, the State Department of Health is authorized to do the work at the expense of the county or municipality involved. The county of San Miguel failed to appoint a county health officer meeting with the approval of the State Department of Health. The Department employed a local physician to act as its representative in enforcing the health laws in that county, and brought suit for recovery of the expenses incurred. In the District Court the Department lost, under a ruling of the judge that the Department had such power only in emergencies. An appeal has been taken to the Supreme Court.



Ohio.—The Court of Common Pleas of Hamilton County, O., dissolved in July an order temporarily restraining the Board of Health and the City of Cincinnati from forcing Wm. P. Devou, wealthy tenement owner to abolish toilets of the catch-basin type. In his opinion Judge Stanley Matthews upheld the sections of the city ordinances, the right of the municipality to enact the same, the power of the Board of Health to enforce them, and he also held that after the municipality has determined that catch-basin toilets are a nuisance, the court can not decide otherwise unless there is a clear and palpable abuse of power, which was not shown in the evidence.

The decision is final and the plaintiff has contracted for the improvements.

STATE HEALTH NOTES—GENERAL

National.—The third decennial Conference for the Revision of the International List of Causes of Sickness and Death was held at Paris, October 11-16, 1920.

The International List is now used by most of the countries of the civilized world as a basis for the classification of mortality statistics. Revision is necessary, in order that the list may keep pace with medical science. Very important changes in the classification were made by this Conference. Many of these changes were made at the suggestion of the American Public Health Association Committee on the Accuracy of Certified Causes of Death. This committee has been studying the International List for five years, with a view to presenting suggestions for its revision at this year's International Conference.

The American delegation consisted of Dr. Herman M. Biggs of the New York State Health Department; Doctors F. J. Monaghan and William H. Guilfooy of the New York City Health Department; Dr. Rupert Blue of the United States Public Health Service; Colonel Henry Shaw of the Medical Department of the Army; Dr. William H. Davis, Chief Statistician of the United States Census Bureau; Dr. Haven Emerson, Chairman, Committee on the Accuracy of Certified Causes of Death, A. P. H. A., and Mr. George H. Van Buren, Supervisor of the Statistical Bureau of the Metropolitan Life Insurance Company. Dr. Emerson, Mr. Van Buren, Dr. Davis and Dr. Guilfooy were members of the Committee of this Association mentioned above, and Dr. Emerson and Mr. Van Buren were the official representatives of the American Public Health Association at the Conference.

The Secretary of the International Conference was Dr. Jacques Bertillon, Director of Statistics for the French Army, and the author of the original International Classification. Dr. Bertillon is at work on the preparation of his report, which, it is expected, will soon be available.

A new motion picture film prepared at the instance of the U. S. Public Health Service vividly presents the life history of the mosquito, especially of the kind that transmits malaria germs and costs the United States people about \$200,000 a year by so doing. Part of the film is "animated" and

part taken from actual life; all of it is life-like.

Most realistic are the views showing how the female mosquito absorbs the malaria germs with the blood of a malaria patient; how the germs increase and multiply and pervade the salivary glands of the mosquito; and how the mosquito passes them on to the nearest innocent bystander, who promptly falls ill with the disease.

The film was exhibited for the first time at the meeting of the Southern Medical Association at Louisville, Ky., November 15 to 18.

Two army hospitals, one in North Carolina and the other in New York Harbor, have recently been taken over by the U. S. Public Health Service. The North Carolina hospital (O'Reilly hospital), which is at Oteen, eight miles from Asheville, will be continued as a tuberculosis hospital with about 1,000 beds. Dr. W. M. Foster will be in temporary charge.

The hospital in New York, variously known as the Hoff General hospital and the U. S. Debarkation hospital, is at Fox Hills, about ten minutes' walk from the New York City ferry station at Stapleton, Staten Island. It will be continued as a general hospital with a capacity of about 500 beds. Dr. J. O. Cobb, recently in charge of all Public Health Service activities at Chicago, will be in charge. By reason of its proximity to New York City this hospital has available the best consultation facilities in the country.

The U. S. Public Health Service is determined to see that every one of the 15,000 tuberculosis patients in the Public Service hospitals shall have the best treatment to be had in any hospital in the land. To make sure that they shall miss nothing, a number of eminent specialists in tuberculosis, not members of the Public Health Service have been requested to visit all service hospitals and to study the conditions at each with a view to standardization and to making any improvements that may suggest themselves. Doctors David Lyman, of Wallingford, Conn.; Victor Cullen of the Maryland State Sanitarium, and Martin E. Sloan, of Towson, Md., will officiate in the Eastern States; Dr. George Thomas Palmer, Springfield, Ohio, in the Central States, and Dr. Henry Hoagland and one or more

others in the South Western States. About two weeks will be spent in each hospital.

The National Research Council has established a Research Information Service as a general clearing house and information bureau for scientific and industrial research. This "Service" on request supplies information concerning research problems, progress, laboratories, equipment, methods, publications, personnel, etc.

Ordinarily inquiries are answered without charge. When this is impossible because of unusual difficulty in securing information, the inquirer is notified and supplied with an estimate of cost.

Much of the information assembled by this bureau is published promptly in the "Bulletin" or the "Reprint and Circular Series" of the National Research Council, but the purpose is to maintain complete up-to-date files in the general office of the Council.

Requests for information should be addressed Research Information Service, National Research Council, 1701 Massachusetts Avenue, Washington, D. C.

At "The Evergreens," a beautiful twelve-acre country estate overlooking Great South Bay along the southern shore of Long Island, N. Y., nurses who are ill as a result of their service in the war, can find in a few weeks of care-free, out-of-door life, health and strength for new work. The estate, formerly the home of Colonel William G. Bates, was leased July 1 of this year by the American Red Cross in recognition of the need of the sick nurses for a place to go during their convalescence.

A picturesque health campaign has been carried on in Shanghai, China, during the summer by a group of boys aided by the American Junior Red Cross, through the Insular and Foreign Division and the Y. M. C. A. The fight has been conducted chiefly against disease carriers.

In beginning their work in any section of the city, the boys put on a parade featured by large models of flies, mosquitoes, rats and mice. These models are three or four feet long and painted in colors, and if a night parade is held the models are lighted from the inside by candles. Besides the models there are a number of transparencies with pictures on both sides, showing the development of a fly, its daily travels and like incidents in the lives of other pests.

Illustrations of methods for exterminating flies, mosquitos, rats, fleas and other disease carriers also enliven the parades.

Besides the parades, open air classes are formed in the municipal markets, school yards and playgrounds. Each child brings his own stool and they sit in a circle around the teacher. The children are given a small bit of paper upon which to draw a simple picture or write a health slogan. They are taught songs in which the main idea of the lessons is embodied and finish by playing a health game. Usually there is a group of 100 to 200 adults standing around listening to the lesson who get more out of it than if it was presented to them directly.

Lectures, stereopticon or motion pictures and a health play by a group of children concludes the campaign in any section of the city.



Arkansas.—In September the first State Conference of Public Health Nurses was convened in Little Rock on the call of the State Supervisor of Nursing, and an organization of a state association was effected. State Health Commissioner C. W. Garrison, M.D., gave the address of welcome, and was followed by speakers on sanitation, malaria control, venereal disease, vital statistics, community health, child welfare, home hygiene, nutrition and school health and home hygiene and care of the sick. The programs covered four days, with round table discussions each day, a health exhibition, sessions for the relation of experiences in practical work, not forgetting Sunday social features.



Colorado.—The courses of the University of Colorado, in co-operation with the Colorado Fuel and Iron Company, in Public Health Nursing have been so successful that the fourth course is now scheduled for February, 1921. These courses are of four months each, and have been conducted at the hospital of the Minnequa Steel Works, with field experience in Pueblo and nearby mining camps.



Connecticut.—The New Haven Health Center has been in active operation since the middle of July, and on November 4 a report was made to the officers of the Center of work accomplished. This includes some 19,371 items of service, performed at the Center and three infant welfare stations,

3,121 being at the Center itself, 8,800 by the visiting nurses, 5,800 by the school nurses and 1,550 by the sanitary inspector. The work at headquarters includes the physical examination (but not treatment) of the well, the near well, or the unwell; the periodic examination of pregnant women; health education through four window exhibits, and the health posters and literature inside; answering questions and giving hygienic advice; bi-weekly staff conferences; vaccination of pre-school children; and routine administration and executive work.

Outside headquarters, to the extent that the inadequate staff will permit, the Center is undertaking instructive bedside nursing, supervision over newborn babies, and health education for pregnant women and tuberculous patients and those in contact with them. Each visiting nurse has a relatively small (but really much too large) district and is doing all the nursing work in it, thus trying out the important principle of localized, generalized nursing.

Contact with the community is being developed by the Health Center officers through talks in the schools, factories, and motion picture houses, while the stimulation of greater health activity on the part of the Settlement Houses of the district is being accomplished by conducting studies of the health of the children and by making these careful examinations the basis of comprehensive reports on the opportunities for health work of such houses.



Illinois.—The Biological and Research Laboratories of the State Department of Health have taken over a serum plant and are engaged in producing typhoid and small-pox vaccines. Plans are that the plant will be enlarged to include other biological products at some future time.

As a result of a sanitary study at Moline, that community has decided to employ a full-time health officer along with the necessary personnel. The position is now open for applicants.

Mr. Baxter K. Richardson has been appointed through Civil Service to the position of Chief of the Division of Public Health Instruction of the State Department of Public Health.

The State Department of Health carried out a rather elaborate exhibit in connection with the Health and Sanitation Exposition

held in Chicago the latter part of November. The exhibit included a large number of mechanical models that portrayed some of the leading and more important points in connection with public health, the exhibit requiring a force of ten people, including two nurses who made demonstrations on the care of infants, and carried on tuberculosis discussions. The Department distributed about 100,000 pieces of literature in connection with the exposition.



Kentucky.—A Department of Hygiene has recently been organized at the University of Kentucky under the direction of the Interdepartmental Social Hygiene Board.

The Department will make provision for the teaching of general and personal hygiene to every freshman with the beginning of next year. On account of being unable to inform the student body about such courses at the beginning of this year, it was made elective. Eighty students thus far have voluntarily elected hygiene. Courses in advanced hygiene and the principles of physical education will be offered next year to those planning to teach.

Physical examinations will be made of all students in the University each semester. Physical defects will be noted and follow-up attention will be given. Parents will be notified as to results of all examinations.

Medical supervision will be given the entire student body, including members of the faculty. A dispensary and a small hospital are at present available for this purpose. The staff consists of three physicians, a nurse and a secretary. An additional teacher of hygiene will be added next year. The aim of the Department is to inculcate health habits. Every effort will be made to teach students the principles of hygiene in the class room, upon the campus, in the dormitories and upon the gymnasium floor. Special emphasis will be laid upon the acquainting of the students with the facts concerning venereal infection.

A sanitary survey of the campus will be made, followed up by continual supervision. All students, except those living at home, will be under the direct supervision of the Department of Hygiene.

The activities of the Department will not be confined to the University alone. Extension work about the state will be done, and

a correspondence course in hygiene for teachers in the state is planned.



Maine.—Mary Jane is the latest addition to the health workers in Maine, and is making herself as popular as the redoubtable Cho Cho of the Child Health Organization. She has a skin that can be bathed and joints that work and she can be handled and placed in any position just as if she were a live child and not a doll. She is used for demonstrations of the care of infants in the movement in the state for healthier babies and instructive work especially to young girls.

The first of a series of regional conferences was held last month in Bangor, at which 23 health workers, representing 15 different communities, discussed school nursing and inspection, dental clinics, child welfare, and parental care.

The State has undertaken a survey of its schoolhouses. The preliminary report notes that—

"Many of the rural school houses are poorly ventilated; badly lighted; heated with those unjacketed stoves which mean that the youngsters must either be too hot or too cold according to their seats in the school room; are not properly screened; and often are not even clean.

"In some rural schools there are no facilities for washing the hands and face; and no adequate source of drinking water. In one particular school, the children, when they want a drink have to go out doors, get down on their hands and knees and drink from the brook which flows near the building. The toilets are sometimes sadly neglected, infrequently cleaned out and not screened from flies."

The Maine State Health Department is assuring the people that measles is an unnecessary disease. It is an old notion that it is necessary for a child to have the measles, whooping cough and other so-called "children's diseases" and has been proved entirely fallacious. It is not necessary for children to have these ailments, and furthermore, in the light of death statistics from measles and whooping cough, it is proved necessary to take every precaution to prevent such disorders. The chances of a child becoming a strong citizen, are far better if he avoids measles, whooping cough, and other diseases of this class.

Maryland.—A new course in public health is under way at Johns Hopkins University in the School of Hygiene and Public Health. The instruction consists of conferences, laboratory work, lectures and visits of inspection. Some of the subjects covered are public health administration, bacteriology, medical zoology, physiology, epidemiology, vital statistics and sanitary engineering. Dr. Welch and President Goodnow are among others on the staff of lecturers and a special course of lectures will be given by such other distinguished health officers as Dr. Heiser, Dr. Chapin, Dr. Emerson, Dr. Armstrong, Dr. Strong, and Dr. Stiles.



Massachusetts.—At the meeting of the Boston Tuberculosis Association on November 18, 1920, Colonel George E. Bushnell was the principal speaker. He was in charge of all the tuberculosis work in the army during the Great War. He said, "We fix our attention too exclusively upon the cases of manifest tuberculous disease. These may be called the failures in tuberculous infection. What of the successes? The tuberculin skin-test shows that practically every adult has experienced a tuberculous infection. Yet 70% of the population are not aware of their infection and never show any clinical evidence of it. These are the successes in tuberculous infection, for their infection has resulted in what is practically a vaccination against the disease. The program for anti-tuberculosis work should be to raise the percentage of adults successfully vaccinated against tuberculosis from 70% to 100%. We may effect much in time in this direction by concentrating our attention upon the children, especially upon those shown by the skin-test to have recently become infected with tuberculosis, and by educating the mothers to protect their young children from receiving large infections with the germ of tuberculosis."

Colonel Bushnell's address was preceded by an address by Dr. George S. C. Badger, President of the Boston Tuberculosis Association, who said, "Our work during the past few years has been only more or less remotely connected with tuberculosis itself.

We plan:

1st. To have Dr. Cleaveland Floyd, of the Bacteriological Department of the Harvard Medical School, study experimentally

the problems of infection of eating utensils, and how efficient the ordinary methods of washing these are.

2d. We plan to have nurses look after the patients who are diagnosed as tuberculous in the various hospitals, from the time the diagnosis is made until they are safely in the special hospitals to which they may be referred.

3d. We plan to make this Association a help to all Boston physicians and the public in general.

Many physicians, and the public in general, do not know how to care for their tuberculous patients, or what steps to take to enter them into hospitals especially provided for them. This Association hopes to give this assistance to all, and make itself useful in the proper disposal for treatment of all such patients."

The report of the Secretary, Mr. Seymour H. Stone, noted the lines of activity for which this society has always been distinguished.



Michigan.—During the past year in the work of fighting typhoid fever the Michigan State Board of Health has made domestic water inspections in 70 counties with nearly 700 consultations on the subject with the possessors of sources of supply. This is the third year that the Department has coöperated with the U. S. Public Health Service in supervising drinking water used by passengers on interstate railroads. During the year 232 inspections of railroad water supplies were made, and of 46 municipal supplies used by railroads 17 were found to be unsafe. Six of the cities found it necessary to install the chlorine system of purification. The inspection of passenger train supplies not only protects the traveling public, but often furnishes information of localities using dangerous drinking water.

The newest activity of the bureau, the study and correction of stream pollution, was begun last April. The scope of the investigation covers the cause of the death of fish and the reason for noticeable odors and taste in fish taken from streams and lakes. Twenty-four surveys were made on this problem. The work in stream and lake pollution will not only protect Michigan's game and resort reputation, but will contribute to the general attractiveness of the state by maintaining clean bodies of water.

Since November 1, 1919, all municipalities owning or operating sewage disposal plants have been required to make monthly reports to the department. The Michigan Department of Health is a pioneer in this method of supervision—a method now becoming popular throughout the country.

City officials are learning that it is much cheaper and safer to chlorinate water supplies than to try to keep the source in a state of natural purity.

A movement is under way on the part of the public health and visiting nurses to support State Commissioner Olin in securing a law which will provide for a full-time medical health officer for each county in the state.

The State Board is rating typhoid cases at an average loss through disability of \$443.80 and is presenting to the citizens of the state the figure of \$1,500,000 as the real cost to the people.

Two cases of imported typhus were noted in the fall in one of the Michigan cities. They were immigrants from Poland, who had passed quarantine at New York. It is believed that the infection was acquired while on the voyage to this country. No secondary cases were found in Michigan and the occurrence is looked upon as exceptional since detention in European ports, the time required for the voyage and the examination at the port of entry care for all but very exceptional exposures.

Dr. Henry F. Vaughan, Health Commissioner of Detroit, Mich., calls attention to the need in cities of an actual annual census covering a few basic facts. With this a health officer is enabled to handle his situation much more intelligently. "An annual population census," writes Dr. Vaughan, "should be a part of every health department's working tools."



New York.—In the group consultation clinics for rural districts which have been conducted during the past summer by the State Department of Health assisted by other departments and in coöperation with local organizations including local chapters of the Red Cross the following groups offered consultation service:

- 1, Pediatrics; 2, School children, (a) physical defects, (b) backward and mentally deficient, (c) nutritional; 3, Oral surgery; 4, Orthopedic surgery; 5, Diseases of the

chest; 6, Diseases of adult life; 7, Neurology and psychiatry, (a) neurology, (b) psychiatry, (c) mental defectives; 8, Prenatal gynecology; 9, Venereal diseases, (a) venereal diseases, (b) genito-urinary; 10, Ophthalmology; 11, Dermatology; 12, Diagnostic Laboratory; 13, X-ray department.

These clinics have been conducted in Livingston, Chenango and Orange Counties, and in Carthage for Jefferson and Lewis Counties. At the series of clinics held for three days at Carthage a total of 330 patients were examined, with primary and intergroup consultations to the number of 479.

The policy of these clinics is to offer consultation service to rural physicians in those cases for which they desire diagnostic aids not locally available. As in other consultations the expert opinion is given to the physician in charge of the case—never to the patient himself or to his friends.

The program of the Second Annual Conference, between the staff of the Committees on Tuberculosis and Public Health of the State Charities Aid Association and the executive secretaries employed by these local committees and affiliated organizations, held October 11 and 12, at the Russell Sage Foundation Building, New York City, consisted of a series of symposiums as follows:

- Educational Methods;

- Some Business Phases of the Executive Secretary's Work;

- Organizing and Operating an Occasional or Period Clinic Service;

- The Christmas Seal Campaign—Its Plan and Scope;

- Local Team and Group Work and Publicity in the Christmas Seal Campaign;

- Special Work for School Children;

- Helping the Local Tuberculosis Hospital Fulfill Its Mission.

The State Department of Health has asked that all hospitals make complement fixation test of the blood a part of their routine examination of patients. A survey of hospitals, both State and private, has been made, and where this practice has not already been instituted the authorities have been asked to do so.

In order that some institutions, as, for instance, the orphanages, tuberculosis and State hospitals might better carry out this work in the future the Department offered to assist them in taking the specimens from

their present resident population. The response received was gratifying. Thirty-four institutions accepted and received the assistance prior to September 1st, and 18 others had asked for it.

Less than two percent of the persons tested were found to have a definitely positive reaction with both antigens, while more than 40% showed suggestive reactions with one or the other antigen. Those persons giving a positive or suggestive reaction are being given physical examinations and social workers are studying their family health histories for the purpose of confirming or excluding the presence of syphilis.

The State Prison Commission recently adopted a resolution urging the sheriff and board of supervisors of each county in the state to make provision for the medical examination of every person admitted to a county jail and to arrange so that all such persons afflicted with venereal disease, tuberculosis or other communicable diseases might be segregated.

During the past year information has been received by the State Department of Health from 60 rural districts in 33 counties of the State of New York that medical service is either inadequate or not procurable. More than half the informants were residents not serving in any official capacity; public officials in some cases, physicians, making up the balance. In several counties one or two townships were reported as in need of physicians, in two counties five townships each were reported, and in one, Delaware County, nine townships were in need of medical service. The population of these districts varied from 500 to 6,000, the nearest physician being from three to twelve miles distant. The average fees which are paid in these places range from \$1.50 per local visit with twenty-five cents for each additional mile to from \$15.00 to \$35.00 per visit.

The course in public health nursing organized last year by Dr. Munson for the Champlain Valley Hospital will be given again this year. Dr. Munson expects to be able to introduce a similar course at the Glens Falls Hospital.

Nine of the fifteen Shinnecock Indian women on Long Island who recently enrolled for a Red Cross class in home hygiene and care of the sick, finished the course with credit.

New York City.—At the business session of the American Dietetic Association held recently in New York City, a motion was made and carried that Miss Lulu Graves, for three years president of the Association, be made honorary president. The following officers were elected: President, Mrs. Mary de Garmo Bryan, 626 Bergen Ave., Jersey City, N. J.; Vice Presidents, Ruth Wheeler, Goucher College, Baltimore, Md., and Rena Eckman, University of Michigan Hospital, Ann Arbor, Mich.; Secretary, E. M. Geraghty, Champaign, Ill.; Treasurer, Ellen Gladwin, Jefferson Hospital, Philadelphia, Pa.

The next meeting will be held in the autumn of 1921 in Chicago or Minneapolis.



Nova Scotia.—Announcement is made by Massachusetts-Halifax Health Commission of appointment of Dr. J. G. McDougall and Dr. Kenneth McKenzie to organize a special clinic at the Health Center, Admiralty House, for certain citizens not yet fully recovered from disability incident to the great explosion disaster. Announcement is also made that Dr. W. E. Daly has been appointed to the tuberculosis service at the Health Center, Dr. S. H. Keshen to be additional anesthetist to the nose and throat service at the Health Center, and Dr. H. G. Grant to the Tuberculosis service, conducted by the Commission's staff from the Halifax Dispensary.

Public Health Clinics have been established in the counties of Antigonish, Pictou, Colchester, Cumberland, Hants and Kings, and public health nurses have been assigned to duty in each of these counties. These nurses, although working under the direction of the Department of Public Health are being maintained for the first year of their service by the Nova Scotia Branch of the Canadian Red Cross Society. By the first of January three other counties (Lunenburg, Yarmouth and Victoria) will have clinics in operation and public health nurses at work. This will mean that half the counties of the Bluenose province will then be organized in this way.

Venereal disease treatment centers are now being operated by the Provincial Health Department in Halifax, Sydney, New Glasgow and Yarmouth. Other centers will be opened shortly in Amherst and

Lunenburg. The Federal Department of Health is coöperating in this work.



North Carolina.—At a meeting in November, the Guilford County Medical Society passed a group of resolutions of which this abstract outlines the general purpose. First, an endorsement of the educational campaign of the North Carolina State Board of Health. Second, a protest against a treatment campaign for any disease or condition. Third, a protest against the state campaign for the removal of tonsils and adenoids. The reasons given for this are that the physicians of North Carolina, who are licensed practitioners, are fully qualified and are sufficient in number to take care of the indigent sick, and none will suffer for want of medical attendance. The resolutions further assert that the campaign for the removal of tonsils and adenoids had been unnecessary, expensive, and reflecting on the willingness of the physicians of the state to take care of these cases. They further suggest that operations have been undertaken at places not suitable for such work, with danger to the patients. The protest calls for a calm and careful study of each case, without excitement or a wholesale method of doing things. It objects that the treatment of disease as instituted by the State Board is looking towards socialistic medicine, and is a step toward state paternalism. The medical society appointed a committee to confer with the State Board of Health.

In reply to this, Dr. W. S. Rankin, State Health Officer, makes note that such a protest repudiates all that the state has done in the treatment of tuberculosis since 1907. He calls attention to the fact of the success of the hookworm campaign in which the reduction was 35%, and the principle was that of treating the infected person so as to prevent him from scattering his infection among others. He says that the cessation of state work would make ineffective the campaign against malaria and would dispose of the campaign against venereal disease. If the whole expression of opinion of the Society were accepted, the free vaccination by the officers of the State Board of Health against smallpox or typhoid would cease, as would the use of antitoxin against diphtheria, the latter of which in

the past five years had its death rate reduced by more than half.

Taking up the reason that it "reflects on the willingness of the physicians of the state to take care of these cases," Dr. Rankin calls attention to the fact that the attitude of the profession and its willingness or its unwillingness has little to do with the matter. The fact exists that these children are not treated, and that fact by itself accounts for and necessitates the position of the state. With reference to the claim that the operations are unnecessary, expensive, and performed at places unfitted for surgical procedure, he gives a list of men who have been engaged in this work, and asks the local society whether it will admit them to be experts. He further calls attention to the fact that in the club clinics there has been one death in practically 2,500 operations, only about one-fifth of the usual loss.

In concluding his outline of reasons why the state is competent to undertake certain work which localities do not customarily do for themselves, Dr. Rankin makes a note of the fact that the State Medical Society of North Carolina endorses strongly the position of the Board in treating public school children with diseased tonsils and adenoids in the club clinic.



Oklahoma.—A departure from the usual type of health gathering was the third annual Oklahoma Public Health Conference held in Oklahoma City, October 12th and 13th under the joint direction of the Oklahoma Tuberculosis Association and the State Department of Health. Realizing the importance of gaining the support of business and professional interests in the public health campaign, the first afternoon meeting was given over to a business men's health session. Addresses were delivered by representative business men in the state on the relation of health to industry and the interests for the business man in the general health campaign. Chambers of Commerce, Rotary, Lions and Kiwanis Clubs sent official representatives to the conference and the united support of these organizations was assured in the state public health movement.

Other sessions were devoted to questions of tuberculosis control and health legisla-

tion, public health nursing and child hygiene and county health problems. Among those who addressed the conference were Robert L. Owens, U. S. Senator for Oklahoma, who spoke of his efforts in behalf of securing a National Department of Health; Professor M. P. Ravenel, President of the American Public Health Association, Dr. S. J. Crumbine, State Health Officer of Kansas and Dr. A. E. Peterson of the National Red Cross.



South Carolina.—In a recent smallpox outbreak in Charleston County much vaccination of the people was accomplished. Dr. Banov and his assistant report the inoculation in a single day of 557 people.

At a recent Conference of County Health Officers, Dr. Robert Wilson opened his address with the truthful sentiment:

"The work that you gentlemen are now doing is a noble work, and while you are sacrificing yourselves financially, you are making money for others, and you are preparing the way for others by taking care of the public health."



Virginia.—The goal toward which the Child Welfare of the State Board of Health is working is to secure for each child in the public schools of Virginia a competent physical examination which will determine whether he has any remediable defects that are interfering with his development either mental or physical. Last year nearly 63,000 children were examined; this year there will probably be twice as many.

In five counties of the state there are 3,000 or more people to each doctor. This is a situation that is causing alarm; and the Governor of Virginia, to whose attention the subject was called by the State Health Commissioner, requested the Board of Medical Examiners to investigate and make recommendations.

Their report suggests that "In order to induce young men to locate in the country, we must make country practice more attractive. We can do this by the improvement of roads, the building up of a good telephone service throughout the rural districts, the establishment of good schools and high schools. Efficient health officers in the counties, vaccination and other preventive methods will lessen the need of so many doctors in the country."

INDUSTRIAL HYGIENE AND OCCUPATIONAL DISEASE

Abstracted by Drs. E. R. Hayhurst and E. B. Starr.

Recent Experiments in the Control of Air Dustiness.—The results of investigations by the service show that in many instances the adequacy of so-called protective devices about machinery in controlling dusts are, because of mistakes in planning the installation and operation, quite as bad as though no protective devices had been installed at all, and worse in the sense that they give a feeling of false security to the workers. The falsity of the general belief that wet-grinding is safer than dry-grinding is often demonstrated by careful tests made at the working planes during regular operations, when the *actual efficiency* of devices are determined. In one plant which made extra effort to comply with the present law in every respect it was found that wet-grinding does not always prevent a dust hazard and that it is absolutely necessary to have some definite method of checking up. The common U-tube test is not always one of accuracy nor reliability. The most definite test is the actual dust count at the plane of work. No general standard of air dustiness has been worked out, but Winslow, Greenburg and co-workers state that the dust content of a polishing shop can be kept generally under 300,000 dust particles per cubic foot (defined as one-quarter standard units in size) and should not average over 200,000. O. M. Spencer, *Public Health Reports*, December 3, 1920, Vol. 35, No. 49, pp. 2907-2916.



Sickness Frequency Among Industrial Employees.—The Service secured figures from certain benefit associations among the employees of certain plants coöperating with the Service. Tabulations include single cases of disability for one week or longer and are based on monthly experiences during the first half of the year 1920 for from eight to fifteen establishments having from 13,000 to 40,000 membership in their benefit associations.

The few women workers were negligible. Venereal diseases were excluded, and disability due to intoxicants, and some other conditions in certain of the associations. The outstanding causes of disability were

found to be the so-called general diseases (particularly influenza, grip, tuberculosis, cancer, rheumatism, diabetes, goiter, anemia and epidemics) respiratory diseases next, and the digestive group third. For these three groups combined the rate of disability ranges from 86% of the total sickness in February to 60% in June. When influenza, grip and pulmonary tuberculosis are removed from the general diseases group, and added to the group designated as "Diseases of the Respiratory System," the rate for diseases of the latter system was greater than the rate for any other group. These respiratory afflictions are characterized by a tremendous seasonal fluctuation. There were also marked differences among the associations in the same month. In February, for instance, Association B's rate of sickness disability was nearly seven times as great as that for Association A. The reasons for these differences are matters of serious moment and require further study. —Dean K. Brundage, et al, *Public Health Reports*, December 3, 1920, Vol. 35, No. 49, pp. 2897-2907.



Health in Mercantile Establishments.—In a coöperative arrangement between the Division of Industrial Hygiene of Harvard University and a group of 25 merchants, an investigation of health conditions and the problems of health conservation in stores was begun, and the present paper is the first of its series covering its results. The paper points out that medical services in stores has the following points of usefulness: (1) it insures good sanitation, ventilation, etc., points in which the physician should be especially trained for this work; (2) it determines the physical fitness of employees and places wisely the slightly handicapped; (3) it utilizes opportunities for preventing diseases; (4) rare emergencies are met; (5) the proper sick benefits determined; and (6) a system of intelligent health records is developed. A single monthly record from one store employing 700 individuals (July, 1920) is given in which during 22 working days there were 240

treatments by the nurse and 70 by the physician, representing 44.5% of the total employees. The writer is led to believe that establishments employing 1,000 individuals could utilize the full time of one physician and recommends at least the half-time services of a physician with a salary of not less than \$2,500. Certain professional and personal qualifications of the physicians are discussed.—Austin B. Emmons, *Jour. of Industrial Hygiene*, November, 1920, pp. 233-237.

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Complete Elimination of Industrial Fatigue.

—The author summarizes his paper as follows: Different amounts of fatigue in a group of workers are discernible as follows: A *day's fatigue* results in simple "tired looks," health complaints, stayed enthusiasm, and inaccuracies of execution. A *week's fatigue* results in obvious listlessness, minor indispositions, leaves of absence, loafing on the job, decreased morale, and incorrect attitudes, both physical and mental. A *month's* or a *year's fatigue* results in evident bodily afflictions (temporary or chronic, associated with deformity or impairment, both physical and mental), quite complete loss of morale and noticeable imperfections in work performed both as to quantity and quality. Obviously, the point of attack is the *day's fatigue*. Does the work group "quit fresh" as it is believed it should, or with fatigue evidences which even the next meal will not efface?

To sum up, then, industrial fatigue seems capable of elimination by attention to known methods of grading the personnel, specifying and exacting personal hygiene, enforcing correct environmental hygiene, and by using as a check "mass" signs of *the day's fatigue* in a group of workers.—Emery R. Hayhurst, *Jour. of Industrial Hygiene*, November, 1920, pp. 256-258.

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Plant Dispensaries and Their Equipment.

—Speaking at the proceedings of the annual Pennsylvania Safety Congress, Dr. Selby discussed very fully the essential requirements indicated in the title. His discussion is full of practical suggestions in regard to efficiency, the avoidance of confusion and a general approval of the unit arrangement of equipment. He describes the impressions he received on visiting the medical depart-

ments of a large number of industries during the war. The dressing unit is the center of activity in the dispensary, and he suggests 19 essential pieces of equipment for the table. The physician is responsible for the acts of the nurse, while a competent clerk or stenographer should take charge of the dispensary records. The physician can and must create a demand for his services. Standards for wound treatment are given: (1) Fresh wound; (2) the infected wound; (3) the clean wound; (4) the indolent wound; and (5) burns.

In summarizing the speaker states that personnel should be pleasant and pleasing to look at as well as versed in knowledge and training, and that patient should be treated with the same consideration as in private practice.—Dr. C. D. Selby, *Bulletin Pennsylvania Dept. of Labor and Industry*, 1920, Vol. VII, No. 4, pp. 234-243.

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Medical Requirements for Air Navigation.

—The selection of fitting personnel has been a matter of careful investigation by the Air Medical Investigations Committee for the purposes of making as effective as possible the Royal Air Forces. In the paper presented the following points are taken up: (1) the importance of previous medical and family history; (2) a discussion of the mental aptitude, in which the writer suggests that an aptitude for sport of various kinds is of equal value to a psychological investigation; (3) the "sensory requisites," especially the importance of vision, tactile and muscular sense; (4) a doubt as to the importance of vestibular tests and the suggestions that those who were unable to swing with pleasure as a child, and have a tendency to be made sick when traveling by train are probably to be exempted; (5) visual acuity, which is of great importance; (6) tests for neuromuscular coördination and nervous stability (self-balancing, the power to lift at arm's length a light metal rod placed on a board from the table to the level of the shoulder, and replace it without upsetting the rod; tremor of eyes, tongue and hands, and the knee-jerk); and (7) importance of efficient circulation and respiration (for which the chief tests are described).

It has been found that some purely temporary cause may be the reason of failure

in some tests, so that attention should be directed to the subject's performance as a whole rather than a failure in any one particular test.

The writer states that the first breakdown is frequently associated with the respiratory system, which reacts upon the circulatory and nervous systems. In support of this view it should be stated, that very early, it was observed that pilots suffering from stress suffered from breathlessness and inability to blow hard.—Martin Flack, *The Lancet* (London), October 23, 1920, pp. 838-842.



The Most Common Occupational Disease.—In an article under another title, Shufflebotham states that miners' nystagmus is the commonest occupational disease known to medical science, and that Dr. Llewellyn has pointed out many times that this disease is again at a standstill (in the matter of its elimination). Compensation for it was rendered to approximately 6,000 miners during the year 1914. The disease takes from 10 to 20 years to mature. The next largest group of industrial diseases that is known (in England) also affects the miners' chiefly and consists of inflammations about the tendons and joint (beat hand, beat knee, beat elbow, etc.). The writer urges that medical men in the great medical schools of such industrial countries as England, Belgium, France, and the United States should receive training with regard to the conditions in which men and women work in the various industrial districts. "An intimate knowledge of the industrial diseases is absolutely essential to the medical practitioner, if he is to detect diseases early and to prescribe the best treatment."—Frank Shufflebotham, *Jour. of Industrial Hygiene*, November, 1920, pp. 253-255.

[This observation from Great Britain that miners' nystagmus is the most common industrial disease shows the vast differences in countries. A number of physicians in America who have followed the subject disclaim the presence of nystagmus among the American (soft coal) miners. Furthermore, the abstractor hereof made a careful investigation of the great soft coal districts of Ohio and Illinois in 1918, and failed to find any effects in miners' nystagmus by inquiring of mining physicians, mining superintend-

ents, and laboring men, and a personal discussion with hundreds of miners. The probable explanation is that these American mines are not actually gassy to a dangerous extent so that the miners can use carbide result that they are not working under the lamps for illumination everywhere, with the poor illumination afforded by the safety lamps which are required by law in the British mines. The reader is referred to my article in the *Jour. of Industrial Hygiene* for November, 1919, p. 360-367.—E. R. Hayhurst.]



Thirty-four Cases of Anthrax in New York City.—This bulletin is practically devoted to a discussion of 34 cases of human anthrax which occurred in New York City during the two years, 1919-1920. The Sanitary Code requires that all cases of anthrax be reported to the Department of Health within 24 hours. As soon as the cases described were reported they were visited personally by a member of the department. The authors point out the increased prevalence of anthrax and give details of each case with a summarizing table and several statistical tables (the small number of total cases renders deductions therefrom uncertain). The cases occurred in persons from 14 to 79 years of age; all but two were males; 11 died; the fatal cases terminated usually within eight days; parts affected were in order: face, neck, both face and neck, and wrist and hands. Bacteriological findings for anthrax were positive in 31 cases, negative in two, and not determined in another. The clinical findings are summarized. The study tends to show that those receiving anti-anthrax serum (20 out of 26) recovered as against recovery of only three out of eight who did not or in whom the method of treatment was not recorded. Occupational causes were as follows: Shaving (using new shaving brushes) 17 cases; manufacture of brushes, five cases; trucking (exposure to hides and skins), eight cases; millinery (hair cloth and hair braid), one case; house cleaning (with hair brush), one case; and unknown, two cases.—S. Dana Hubbard, M. D., and Wm. Jacobsohn, M. D., *Monthly Bulletin, N. Y. C. Health Department*, November, 1920, pp. 249-266.

PUBLIC HEALTH LABORATORY NOTES

Abstracted by Arthur Lederer, M. D.

Rapid Method of Pneumococcus Typing.—The method described is a rapid precipitin test of filtered pneumonic sputum, to which bile previously has been added. By this method a "typing" of the pneumococcus may be effected within half an hour after receipt of the sputum.—W. W. Oliver, *Jour. Inf. Dis.*, 27, 310, (1920).



Hemolytic Streptococci in the Stools of Scarlet Fever Patients.—Typical hemolytic streptococci were isolated from the feces of 30% of 85 scarlet fever patients. They occurred in the feces at irregular intervals with no definite relation to the age of the patient, character of the stool, duration or intensity of the illness. The number of colonies was small in comparison to the number of other organisms, such as *B. coli*, staphylococci, and green-producing streptococci, but when it is considered that only a small part of one loopful of the stool was studied it seems probable that hemolytic streptococci occur in the stools of scarlet fever patients perhaps more frequently than is indicated by these figures. Six or 11 strains of hemolytic streptococci isolated from the stools of scarlet fever patients were agglutinated or opsonified by immune serum from a sheep injected with hemolytic streptococci obtained from the throat of an early case of scarlet fever.—W. B. Moody and E. E. Irons, *Jour. Inf. Dis.*, 27, 363, (1920).



Plague-Like Organisms In the Wild Rats of Sao Paulo, Brazil.—Three strains of bacilli were isolated from normal appearing rats of Sao Paulo, at a time when the city was in close proximity to and in constant danger from bubonic plague. It was proved by cultural methods and animal inoculation that these organisms were not plague but belonged to the closely allied pasteurellosis group. A rapid and sure diagnosis of *B. pestis* is not always a simple matter. One is not justified in relying on one or two modes of differentiation only, but one must apply to every differential method known.

B. enteritidis, which may resemble *B. pestis* somewhat in morphologic and staining characteristics, was isolated from the kidneys of a normal appearing rat. The differentiation between *B. pestis* and *B. enteritidis* is a simple and rapid process.—W. G. Smillie, *Jour. Inf. Dis.*, 27, 378, (1920).



Further Studies on the Specificity of Streptococci.—The serum of a sheep immunized with hemolytic streptococci from the throat in the acute stages of scarlet fever protected mice against cultures of hemolytic streptococci isolated from scarlet fever patients, but not against hemolytic streptococci from other sources, such as erysipelas, mastoiditis and influenza. This antistreptococcus sheep serum rapidly lost its opsonic and protective power, which was restored by the addition of fresh normal sheep serum. These experiments, together with the opsonin and agglutination reactions, give additional weight to the conclusion that the hemolytic streptococci from the acute stage of scarlet fever form a distinct biologic group, apparently peculiar to scarlet fever.

The serum of a sheep immunized with a hemolytic streptococcus from an acute case of erysipelas was found to contain opsonins and agglutinins for the hemolytic streptococcus of this disease, but not for hemolytic streptococci from other sources, such as scarlet fever, wounds, *otitis media*, influenza and puerperal sepsis. The results of absorption tests also suggest that the hemolytic streptococci from erysipelas form a distinct group, erysipelas streptococci removing the opsonins for these cocci, while absorption with a scarlatinal hemolytic streptococcus had no such effect. It would appear from these experiments that the hemolytic streptococci in erysipelas belong to a distinct immunologic group, as determined by opsonification and agglutination.—Ruth Tunnicliff, *Jour. A. M. A.*, 75, 1339, (1920).

Specificity of the Wassermann Reaction.—The Wassermann reaction is of a two-fold nature. There is a nonspecific physical-chemical reaction and a strictly specific biologic reaction, the two combined forming the usual reaction as we know it. The liver antigen gives about 15% more of positive reactions than other antigens, and the author found that when liver antigen and heart antigen were used parallel, the reaction was always more pronounced with the former in case of active syphilis; when the reaction was about the same with both, this was a sign of the lack of the true biologic response, and the test was not specific. When the reaction is positive with the liver alone, and the heart antigen is negative, this may be interpreted as showing that the subject has merely inherited syphilis, or acquired syphilis that is yielding to treatment, or that after a negative phase the syphilis is flaring up again, or that he is a tabetic or that the syphilis is of a very long standing. The advantages of using two antigens at least are thus evident.—Durupt, *Presse Médicale*, (Paris), 28, 636, (1920); *Jour. A. M. A.*, 75, 1379, (1920).



Quantitative Determination of Protein in Cerebrospinal Fluid.—A method employing sulfosalicylic acid as a precipitant is given for the determination of total protein in spinal fluid, accurate to within approximately five percent. The method is adapted to use in any well equipped clinical laboratory, and the technic can be readily acquired. It has the advantage that only a small amount of fluid is employed, that it is equally accurate with protein-poor or protein-rich solutions, and that a determination may be made in about ten minutes.—W. Denis and James B. Ayer, *Arch. Int. Med.*, 26, 436, (1920).



Blood Chemistry of Pernicious Anemia.—The nonprotein nitrogen, urea and creatinin values are somewhat higher than normal. This is probably due, not to a permanent kidney lesion, but rather to the decreased amount of circulating blood. The uric acid, the amino-acids and the blood sugar are high. The alkaline reserve is subnormal. The refraction and specific gravity are both astonishingly low, indicating deficiency in serum albumin, serum globulin

and fibrinogen. In most instances the freezing point is very near to normal. It is slightly raised in a small percentage of cases. This is due to the small increase of nonprotein nitrogenous substances and to the presence of normal or slightly increased amounts of inorganic salts.—A. O. Gettler and Edward Lindeman, *Arch. Int. Med.*, 26, 453, (1920).



Xanthochromia.—There are many conditions which may cause a yellow spinal fluid. The great variability in the disease processes in which xanthochromia has been found renders the color itself of no diagnostic value. A yellow fluid is always diagnostic of an organic lesion or infectious process with the exception of those cases in which serum has been injected intraspinously. The presence of the Froin syndrome is pathognomonic of an obstructive type of spinal lesion.—Louis A. Levison, *Arch. Int. Med.*, 26, 459, (1920).



Method of Cultivating the Gonococcus and of Testing Germicidal Agents Against It.—The medium employed is a two percent beef or veal infusion agar of a hydrogen-ion concentration of 7.4. Sterile ascitic, pleuritic or hydrocele fluid is added to the melted agar in the ration of one part of fluid to two parts of agar. The inoculation is made as plentifully as possible. It is important to have the medium at body temperature when inoculation is made, to keep it so thereafter, and to prevent cooling of the material before inoculation. Visible colonies are noted in from 12 to 15 hours, and profuse growths in 24 hours. The viability of the gonococcus on this medium is about seven days. Pure cultures can usually be made from acute urethritis cases directly, if the meatus is carefully cleaned beforehand and the cultures are made from well within the urethra. If other organisms are present, plates may be made from the same medium, and placed in the incubator in vacuum desiccators, in which the pressure is lowered to 10 percent. Good growth may be obtained on fluid mediums prepared as above except for the agar, and with or without sugar. The agar tubes should have, after hardening a small quantity, about 0.5 cc., of water of condensation in the lower angle of the slant. This assures the best growth. Primarily cultures have been suc-

cessful in every case in which gonococci were clearly demonstrated in smears. A large series of drugs used in the treatment of gonorrhea has been tested by the authors' method. The results show that some of the new mercurochrome drugs are more effective than any others yet tested, and superior to mercurochrome-220.—Ernest O. Swartz and David M. Davis, *Jour. A. M. A.*, 75, 1124, (1920).

†

Diurnal Variations in Hemoglobin Content of Blood.—The diurnal variations in hemoglobin percentage are often very considerable and may even reach as much as 30% while 10% changes are of more or less common occurrence. On the average, the excursions seem to be more marked in individuals or animals with a low hemoglobin content of the blood. The authors do not offer any rational explanation of these diurnal variations, though there is strong evidence that they are closely connected with variations in the pulse rate, blood pressure, rate and volume of respiration, and possibly with fluid absorption or kidney secretion.—G. Dreyer, H. C. Bazett and H. F. Pierce, *Lancet (London)* No. 5064, p. 588 (1920).

†

Modification of Urine Reaction After Arsphenamin Treatment.—The Almen-Nylander test for glucose in the urine proved strongly positive in over fifty syphilitics tested during or after arsphenamin treatment. Neither before nor later was there any indication of glycosuria.—M. Trosarello, *Riforma Medica (Naples)*, 36, 687, (1920); *Jour. A. M. A.*, 75, 1166 (1920).

†

A Mutating, Mucoid Paratyphoid Bacillus Isolated From the Urine of a Carrier.—The organism represents a capsule producing, mucoid paratyphoid strain; it grew in large, very wet, slimy colonies with a reddish grey hue. The bacilli were very small, the motility slight or lost. The agglutinability was specific, but the reaction was very slow, the maximum reached in a far longer time than was the case with typical strains. The absorption of complement took place exactly in the same doses and in the same time as in tests with the typical strains. The microbe showed the same resistance against normal human serum as the typical strain. Likewise white mice were killed by nearly

the same doses of the two strains. The organism satisfies all claims that are necessary to establish a real transmutation of bacteria.—Th. Thjotta and Odd Kinck Eide, *Jour. Bact.*, 5, 501, (1920).

†

Stability of Drawn Blood.—The results obtained seem to indicate that the changes taking place in blood, as shown by ordinary chemical estimations, are slight in character. A sample of blood may be kept in a clean container for about 20 hours at room temperature without undergoing any marked decomposition.—H. L. White and Thomas Watson, *Jour. Lab. Clin. Med.*, 6, 45, (1920).

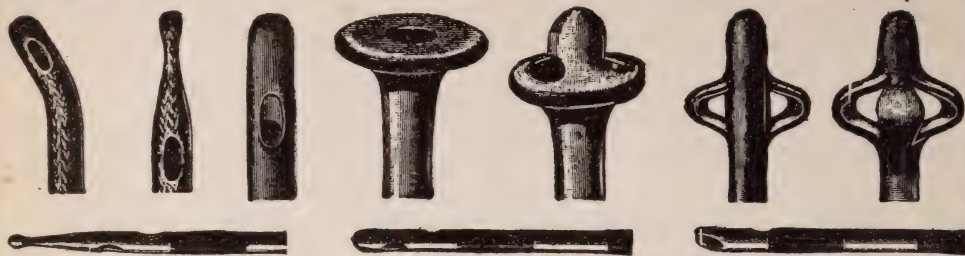
†

The Blood Alkali Reserve With Experimental Infections.—The blood alkali reserve of animals injected with bacteria is lowered coincidently with the initial leukopenia, and during the subsequent increase of the leukocytes rises to or exceeds the level determined originally for the animal. These changes occur within relatively short timed intervals. Graphs of these reactions resemble in contour those generally known for immune body production.—Edwin W. Hirsch, *Jour. A. M. A.*, 75, 1205, (1920).

†

Routine Cerebrospinal Fluid Examination.—The author urges that no patient having nervous symptoms, even though there is a clear history of syphilis, should be regarded as having neurosyphilis until proved so by cerebrospinal fluid examination. No case showing signs of organic nerve disease, and in which no suspicion of syphilis is entertained, should be regarded as non-neurosyphilitic until proved so. No case with signs of organic nerve disease and a positive Wassermann reaction in the blood should be diagnosed as neurosyphilis until the cerebrospinal fluid also has been examined. No case with signs of organic nerve disease should be regarded as not neurosyphilis merely because his serum Wassermann is negative. In the diagnosis of neurosyphilis by the above methods the combined evidence of all the tests should alone be relied on. On no account should the diagnosis be made on the result of one test alone.—A. D. Bigland, *Lancet, (London)* No. 5066, (1920); *Jour. A. M. A.*, 75, 1232, (1920).

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VALUE OF ANIMAL EXPERIMENTATION TO MANKIND

GEORGE HOYT WHIPPLE, M. D.

*Dean, Medical Department,
University of California,
Berkeley, Cal.*

Read at the General Sessions, American Public Health Association, at San Francisco, Cal.,
September 16, 1920.

IT is impossible to cover the subject as indicated by the title of this paper by anything less than a large book. It is common knowledge to medical workers, but should be repeatedly emphasized in public statements for the information of the public that all our recent advances in medicine, surgery, public health and allied fields are based upon animal experimentation, which is fundamentally essential for future progress. The public has no appreciation of these facts, and this information with suitable illustrative examples cannot be too often emphasized in public addresses.

Because of the lack of sympathy of certain groups of people with medical study and treatment, we are faced with a serious situation at this time in this state. An initiative has been placed on the ballot to be voted on by the people at the November election—called the Antivivisection Initiative No. 7. This proposed bill would abolish any and all animal experimentation in this state. All physiological experiments on any living animal would be prohibited—even feeding or breeding experiments. To defeat this measure will require the united efforts of all physicians, public health

workers and public spirited citizens, who realize the serious situation and will take the necessary trouble to meet and combat the unscrupulous propaganda which is spread by the Anti-vivisectionists.*

Let us review in brief some of the benefits which have come to medicine through carefully performed experiments done upon animals with particular reference to public health activities. We recall that all the great progress of modern surgery is based on the work of Pasteur and Lister. It is worth noting that some of Lister's work with animals was done in France because of the annoyance caused him by the pernicious activities of English antivivisectionists who valued the lives of animals before those of human beings. Modern medicine came into its own when the etiological agents of various diseases were discovered. The very first step in the study of disease is the transfer of the infection to animals. Given the experimental infection of animals, the door is wide open for a careful study of the cause, prevention and cure of this disease. Syphilis is perhaps as good an

*The Initiative was defeated by a two to one vote.

example as any. Its conquest dates from the time the infection was transferred to monkeys and later to rabbits.

Physiology was one of the first of the medical sciences to develop. Animal experimentation is its main resource for teaching and investigation. Perhaps the first thing to be investigated was the circulation of the blood, which up to this time had never been understood. This study of the dynamics of the body is progressing with great rapidity and recently is giving us much information which concerns the ductless glands of the body.

It needs no argument to show that the great progress in bacteriology and pathology is due to the use of animals. Such progress would be absolutely inconceivable under other conditions. The newer work in physiological chemistry is going ahead very fast by means of a chemical study of the various fluids and tissues of the body (normal and abnormal). The study of metabolism, or the exchange going on constantly in the body, a contrast of intake and outgo, is being rapidly advanced by animal experiments.

Public health activities concern us particularly at this time. How are these dependent upon animal experimentation? This may perhaps be best elucidated by means of examples which are familiar to all physicians.

Rabies or hydrophobia has been prevalent to an alarming degree in the great valleys of this state, as well as in the mountains of the northern counties where coyotes were infected. When a person is bitten by an animal suspected of being rabid it is of the greatest importance to make a certain diagnosis as soon as possible. An accurate and conclusive diagnosis can only be made by means of inoculating material from the suspected animal into a normal animal. Treatment can then be given to the persons bitten if the diagnosis is positive.

Tuberculosis of man or animal is of much concern to the public health worker. It is to be recalled that the positive diagnosis of tuberculosis infection in the human being can only be confirmed in doubtful cases by means of animal inoculation. Testing of suspected cattle for tuberculosis can be done only by means of an experimental inoculation with tuberculin. The testing of suspected milk likewise requires the use of animals.

Food poisoning concerns both man and animal in this and other states. Much of the forage poisoning in animals as well as the food poisoning in human beings is due to a poison formed by the *Bacillus botulinus*. Botulinus poisoning is of much commercial importance, as it touches the great canning industries of this state. To ascertain all the facts concerning this condition with the view of complete prevention of food poisoning is the object of a group of investigators who are working with the aid of a liberal grant from the National Canners' Association. This large piece of work concerns all the people of this state, yet few of them know about its existence even. This work calls for the use of large numbers of animals. In fact, a suspected sample of food is first tested by means of inoculation into a guinea pig.

Mining and the projection of tunnels (water power) are of considerable economic importance to the state. Hookworm is prevalent in many mines, and its control demands a knowledge of the facts demonstrated by animal experiments. It has been shown that hookworm infections are due to contact between the skin and the infected material (contaminated soil or feces). The little parasites work their way through the skin and finally come to the intestinal tract. These facts indicate the necessity for proper disposal of human excreta in mines and the treatment of the infected human carriers. Mine

gases also are dangerous to the workers. A simple test for these gases is the exposure of a canary or white mouse in the suspected areas. These little animals are much more susceptible to these odorless but poisonous gases, and give warning before the danger point for humans is reached.

Bubonic plague has been introduced into California just as more recently it has been brought to Texas. It is still present in the ground squirrels of the San Francisco Bay region, and an epidemic may develop whenever conditions are favorable, as was the case last winter. The control of any epidemic of this dread disease requires the use of animals; and all the important facts relating to its rat-flea carriers were discovered by animal experimentation. A certain diagnosis of a suspected human case requires the use of animals.

Diphtheria and syphilis are contagious diseases present in all communities. These diseases can be controlled by curative sera and drugs. But the essential diagnosis requires the use of animals. It is too easily forgotten that the common Wassermann diagnostic test for syphilis requires the use of animals. The standardization of diphtheria antitoxin is under United States Government control and can only be done by the use of animals. The standardization of salvarsan, or "606," the curative drug for syphilis requires the use of animals and is under government supervision. All the preliminary study of these two diseases which finally leads up to their

control by means of specific therapeutic agents was carried on by means of animal experimentation.

The word "sanitation" has become popularized, and for that reason is used by people who have no knowledge of its meaning. A person may praise "sanitation" and in the same breath condemn "vivisection." It is obvious that sanitation includes the application to practical problems of the knowledge gained in the study of bacteriology by means of animal experimentation. To certain people "sanitation" means cleanliness of body and environment and explains all the advances in scientific medicine. But given the most cleanly body and environment in the world, we should still see the prevalence of diphtheria, hydrophobia, tuberculosis, botulism poisoning, etc. Malaria and typhoid carriers would work their fatal way in the most cleanly communities. It is only by a clear understanding of the disease virus and its transmission that the disease can be prevented.

These facts give sufficient emphasis to the value of animal experimentation (vivisection). The progress in medicine in the past has depended upon the work done upon animals, and future progress will be equally dependent. We must not permit medical progress, medical teaching and practice in this state to be handicapped by any such legislation as that proposed in the Anti-vivisection Initiative No. 7. It is a duty of every public health student and medical practitioner to work unceasingly to defeat any and all similarly pernicious measures.



Two important Symposiums from the San Francisco meeting are still scheduled for early numbers of the JOURNAL, Health Centers and Health of Students.

WHO SHALL NURSE THE SICK?

JOHN DILL ROBERTSON, M. D.

*Commissioner of Health,
Chicago, Ill.*

Read before the Public Health Administration Section, American Public Health Association, at San Francisco, Cal., September 15, 1920.

Commissioner Robertson asserts that with two months' schooling intelligent women can become capable nurses. He brings out an important by-product to the work in public health education of the women who study. They prove to be a force in caring for their own families as well as others. The Chicago Training School has graduated four thousand pupils.

The great problem confronting health officers everywhere is the problem of providing adequate nursing service for the community, at a rate within the means of those who must pay for such service.

The rich and the well-to-do can afford to pay the cost of a registered nurse. The very poor are provided for by charitable institutions. The rich and the paupers, however, make up but a small part of the population of the average community. We have left, after excluding these two classes, the great body of workers, both laborers and salaried men. These people are not willing to accept charity, or anything that looks like charity. They are accustomed to pay full value for what they receive and they try to purchase that which is within their means. When it comes to nursing, however, they cannot find any competent nursing service that is within their means; for I need hardly point out that even if a laborer makes a dollar an hour for an eight-hour day—and most of them make less than that—that laborer, with his two hundred or two hundred and fifty dollars a month, cannot afford to pay one hundred and eighty or two hundred dollars a month to a registered nurse. There would be nothing left to pay for rent, fuel, food and clothing. Perhaps there are still places in the United States where one can get a registered nurse for less than this amount but in my city the regis-

tered nurse is paid thirty-five or forty dollars a week, and her board amounts to at least ten dollars a week in addition. There may be places where she works for less but I do not see how she can afford to when one considers the length of time she has spent in training before she is eligible for registration.

To solve the problem of providing competent nursing service for that great part of our population which is neither very rich nor yet very poor, we established the Chicago Training School for Home and Public Health Nursing. That school has been in operation now for more than a year. It has graduated 4,231 pupils and will soon graduate another class. The graduates of the institution have been in service for from two to ten months. This means that the school has passed the experimental stage, and what I have to say about it is based not on theory but on actual facts.

For more than twenty years I have been saying that any competent, bright woman could be trained for nursing in a few months. In the past those who opposed this belief have been able to say: "That is merely a matter of theory with you;" but they can no longer say anything of the sort. That capable women can be trained to make competent nurses in two months' time is now a matter of knowledge.

To open any school, three things are

necessary, namely: a place to meet, teachers and pupils. We were fortunate enough to get the use of a building that had housed a medical college, for our meeting place. This assured us of classroom and amphitheatre facilities.

Our faculty we selected from the staff of our Health Department employees, going outside that body only to secure a lecturer on "First Aid." To give these lectures we secured the services of an exceptionally able young surgeon, who is a good speaker. When selecting our teaching staff we had to consider not only knowledge of the subject to be taught but also ability to speak distinctly enough to be heard by all members of a class; ability to interest a class; ability to select the essential parts of the subject from the unessential; in short, personality.

Our Department of Health in Chicago comprises some 1,400 employees. From this number it was possible to select a faculty of unusual excellence. Each subject has been taught by a specialist in that subject. The lectures on "Contagious Disease Nursing" are given by the head of the Contagious Disease Bureau; the lectures on "Tuberculosis" by the medical superintendent of our Municipal Tuberculosis Sanitarium; the lectures on "Infant Care" by an exceptionally successful doctor attached to our Infant Welfare Department; the lectures on "Sanitation" by the head of our Bureau of Sanitation, and so forth.

Once we had the building and the faculty, we still had to get the students before we could open our school. Our school opened at an auspicious time, in that the terrible influenza epidemic of 1918-1919 was still fresh in the minds of the people and we were prophesying a recurrence of the epidemic in the winter of 1919-1920. Even so, we did not expect to enroll more than 60 or 80 students and would have felt content with 40 or 50. Eight hundred women enrolled for the two months' course and finished it. When the second class enrolled we

found we had 1,600 who wished to take the work. We could not possibly accommodate such a number but in spite of all we could do we were not able to reduce the class much below 1,400. This was more than we were able to care for properly and we were not satisfied with the work of the second term. The third term we enrolled 800, which was as large a class as we could handle satisfactorily. By the time it graduated the influenza epidemic of 1920 was past. With the fear of this removed, people began to wait until it suited them to take the course. In the beginning everyone had felt a need to get the course before the disease reappeared. Those who failed in that object felt that they could take it when convenient. Consequently, our classes have been smaller since the influenza epidemic: our fourth class with 600 graduates, our fifth with a little less than 500. Our present class is only 300, because women feel they cannot spare the time during the canning season. Last year, with the epidemic threatening, they let neither canning nor heat nor any duty keep them from the classes. We are assured of a larger attendance at our next class and we expect the school to become a permanent one.

The training is meant, of course, for Chicago women but we have never excluded students from outside of the city who wished to take our course. We should have to limit the number in some way, if a great many from other places came in, but so far anyone who seems capable of doing the work is admitted to the class room. We had one woman come from New Mexico to take the course and another from Colorado. Both had relatives in the city and had learned of the work through them.

Each class meets three times a week for two hours at a time. One hour of each period is devoted to lectures and the other hour to nursing demonstrations. We have both afternoon and evening classes, in order to enable the housewives

of the city to select the time of day that is most convenient to them.

Our student body is made up of more than 20 different nationalities; of widows, married women and single women; of college graduates and of women who never finished grammar school. Of those whom we have already graduated, 808 have been high school graduates and 205 college or university graduates.

There is no fee charged for the instruction given during the course but we charge a fee of \$5.00 to those who wish to take part in the graduation exercises. This fee covers the cost of their graduation dinner, of their certificate and of their note book. Each student is required to buy her own clinical thermometer. Aside from this there is no expense attendant upon taking the course and there is absolutely no obligation upon the student to use her training at all, unless she wishes to do so. We assume that anyone who will take the time to pursue the course will be sufficiently interested to use her knowledge.

In spite of the fact that we charge no fees other than the \$5.00, the school is self-supporting. It costs the Department of Health nothing except the time of those who lecture at it.

The notebook contains all the lectures given to a class. We print them on our Health Department press and give them to the students after they have finished their course, in order that there may never be any misunderstanding as to what they have been taught, and in order that they may have a reference book at hand to refresh their minds upon some point about which they are in doubt.

Of those whom we have graduated, 2,336 have expressed a wish to continue their study of nursing. We have opened up an Extension Class, for which we charge a fee of \$5.00 for the course of 12 lectures. We have also opened a Hospital, in which those of our graduates who wish to do so can take a three months' hospital course. Fifty have al-

ready taken that course, but the hospital is too large a subject to discuss here.

Many of our graduates do not wish to nurse outside of their own homes, but that makes no difference to a health officer. If a housewife can nurse her own sick, she makes no call upon the nursing supply of the community, and her sick are cared for—the only points in which we are interested.

When we opened our school in 1919, we had a threefold object in view: *First*, to provide for the expected recurrence of influenza; *Second*, to train a body of women who would render nursing service at a wage within the means of the average family; *Third*, to popularize preventive medicine. All three of these objects, as you will agree, are health activities that come well within the scope of a health officer.

Following the influenza epidemic of 1920, we sent out questionnaires to our graduate body, in order to find out to what extent we had been successful in our first object. We received replies from 877 of our graduates. This number reported having cared for 1,836 and having visited 9,608 other cases during the four weeks that the epidemic was at its height. During the preceding epidemic the four great nursing organizations of the city, the Visiting Nurses' Association, the Municipal Tuberculosis Sanitarium, the Health Department Field Nurses and the Infant Welfare Stations, cared for or visited a total of 45,207 cases in eight weeks. By a comparison of these figures you will appreciate how materially the new school contributed to our nursing facilities.

As our second object, to provide a cheaper nursing service, I refer you to the following figures. Of the graduates willing to work outside of their own homes, 25% are willing to work for from \$15 to \$20 per week, and about 65% are willing to work for from \$20 to \$25 per week. After we have trained a sufficiently large number, we expect

the wage to settle at about \$20 per week.

The third part of our threefold object is one that is difficult to measure. About the only concrete thing that we can quote is the fact that more than 300 of these women have gone to competent physicians for a complete physical examination since we lectured to them on the importance of annual physical examinations. Every medical man agrees that annual physical examinations effect a huge saving in life and suffering. By such examinations diseases are discovered in their early stage, which is almost always a curable stage. All of these women were taught how to prevent the spread of contagious diseases, and we know from isolated incidents which keep coming to our attention that those women who took our course have been active since their graduation in keeping their families well. They know the dangers of a septic sore throat now, as well as the danger attendant upon a "little cold." Every lesson of our course has been given as much to teach these women how to keep themselves and their families well, as how to get them well once they are ill.

These nurses of ours are capable. The physicians who have had them on cases report favorably of their work. We have more calls for them at the Department of Health than we are able to fill.

In the beginning, friends said to me: "You may be able to teach them to care for babies and invalids and tuberculous patients, and that sort of cases, but you can never train them for surgical nurses." You understand that in the medical world surgery is looked upon as the final test of a nurse. If she can do surgical nursing, it is assumed that she can do anything. I do not care to make the statement that such is a fact. I merely state that it is usually believed to be a fact.

As I said earlier, we have opened a hospital where graduates of our two months' course can take three months

of hospital training if they wish to do so. We have already treated about 90 patients at that hospital without a single accident or death. We have had a wide variety of operative cases there. The Superintendent of Nurses, who is a registered nurse from an old training school, does not come into the operating room. These women attend to the duties of a surgical nurse with such instruction as they receive from me and my assistant. They have, of course, been taught the names of the instruments before they are allowed to assist.

Before I was a health officer I was a surgeon. I was attending surgeon at Cook County Hospital for 15 years, operating three days each week. In all, I have performed more than 6000 major abdominal operations, not to mention countless operations of other sorts. I have been assisted by every description of nurse from every sort of training school; consequently, I feel that I have plenty of ground for comparison between these nurses from the two-month course and nurses in general. I have never found better nursing service anywhere than the service of these women.

They are most of them trained housewives. This means that their fingers are skillful and adept. Women who all their lives have been lifting roasts from the pan so as not to splash themselves with hot grease find nothing new in lifting surgical instruments from their place. Women who have threaded needles thousands of times in order to sew on buttons, find nothing new in threading a surgical needle. Women who are accustomed to tasks that call for care and accuracy find nothing new at all in the operating room except the instruments themselves, and these they can soon learn to handle. Any woman who can learn the difference between teaspoons, tablespoons and coffee spoons can learn the difference between the different sorts of forceps.

These women can, therefore, be trained to do surgical nursing. They

have been trained to do it. They can likewise be trained to do any sort of public health nursing. They can be trained to do it in as short a time as any registered nurse, for you gentlemen know as well as I do, that no registered nurse is ready to do public health work until after a period of special training. In Chicago we count on about three months' training before a registered graduate nurse is ready to nurse in our health force.

These women who have attended our school average around forty years of age; more than half of them are married or widowed. Life itself, has taught them how to meet family and community problems. They need no special training from us in that matter. They need only a training in the fundamentals of nursing, and that, we have found, they get readily in eight weeks.

Institutions such as ours are needed in every community. Running such a school is essentially health work, in that the school teaches how to avoid illness while instructing how to care for it. There are, however, comparatively few communities in which such schools will be opened because the Nurses' Union, which is what the Registered Nurses' Association really is, is opposed to this short term. It does not menace them in the least, for, with the medical schools in the country turning out 1200 doctors less than are needed each year, the registered nurse will need to fear no competition from the short term nurse,

who is in reality a "housekeeper for the sick."

The shortsighted among the registered nurses, however, do not appreciate this fact, and they are solidly opposed to such schools. In Chicago we have paid absolutely no attention to their protests, and their opposition has injured us not at all. Incidentally, I might remark that we have not injured them. As many young women enroll for the regular hospital courses of two and three years as would enroll if we were not in existence. We draw our students from that great body of women who wish to know enough about nursing to be capable nurses, but do not wish to spend two or three years in learning how. There is plenty of work in the world for both classes of nurses, and the registered nurse has no right to object to schools which will enable people who cannot afford to pay for her services to secure competent nursing care during illness. I have no doubt that health officers who establish such schools in their communities will find the opposition as harmless as we have found it, provided they pay no attention to it.

In conclusion, permit me to say that the Chicago Department of Health will assist to the extent of its resources anyone wishing to start such a school.*

*Since writing the above the sixth and seventh classes have been enrolled. The seventh class numbered 950 and the eighth 800.

The Health and Sanitation Exposition was conducted under the auspices of this School. The net earnings of the Exposition amounted to \$93,000.00.
J. D. R.

Typhus Problems.—Typhus fever was more prevalent in Europe last summer than in previous years, and this winter may see a great epidemic of the disease, according to Sir David Henderson, Director General of the League of Red Cross Societies. He states that peace in Eastern Europe will mean the return of a host of refugees from Russia to Poland, Esthonia, and probably Roumania. The demobilization of the Polish army will remove the opportunity to quarantine the eastern frontier, and so the areas mentioned are likely to be rein-

fect. He calls attention to three prime necessities for fighting the epidemic. They are clothes, fuel and transportation. Clothes in order to supply to persons while their one set of garments is being deloused and also to replace those which are destroyed during the process; fuel to heat water for delousing; transportation for coal and for food to give to those infected while they are in quarantine and at the delousing stations for several days. All of these requisites are now lacking.—J. A. T.

THE VALUE OF THE PUBLIC HEALTH SURVEY IN THE PUBLIC HEALTH CAMPAIGN

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and

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Read before the Sociological Section, American Public Health Association, at San Francisco,
September 13, 1920.

The value of a public health survey depends as much on the community as on the survey itself. Its benefits lie largely in the follow-up. The survey is a powerful agent in stimulating public interest, diffusing knowledge and defining the health status. Like the physical examination of individuals the survey should be a regular function.

ABOUT ten years ago, the public health survey was developed in this country, as a means of promoting public health progress. During this time many surveys have been made, notably those under the auspices of the Russell Sage Foundation, the New York Bureau of Municipal Research, the United States Public Health Service, the various State Health Departments, the Delineator, and others by independent investigators such as Professor C.-E. A. Winslow and Mayo Tolman. The nature of the surveys varied considerably. Some were very complete and based on original investigations and findings. Others were more superficial and lacked the necessary information on which to base recommendations. A public health survey may be defined as an investigation conducted by a trained corps of workers to determine the exact status of those conditions which may affect the health of the community, directly or indirectly. It is only such surveys that the authors have in mind in attempting to determine their value.

During the past five years the authors have had occasion to conduct public health surveys in Taunton and Quincy,

Mass., Glen Ridge and Union Hill, N. J., and in the following cities in Oklahoma: Oklahoma City, Tulsa, Muskogee, Bartlesville, Shawnee, Enid, Ardmore and McAlester. It is in looking back over this work that an attempt is made to evaluate the worth of such endeavors.

That the value of a public health survey depends on the degree to which the community is organized for conducting and following up the survey is readily recognized. It also depends on whether the survey is conducted under official auspices, requiring a complete report and follow up work, or merely for the information of the investigator. The surveys of the Rockefeller Foundation, for example, have been made primarily for the information of that body. In the public health surveys of Taunton and Quincy, Mass., conducted by one of the authors, the work was also done entirely for private information, so that few people knew of it except those directly reached by the investigator in his search for information. In these surveys the investigator alone benefited by the study.

The Oklahoma Public Health Surveys, on the other hand, were thoroughly organized and conducted under popular

auspices, and were planned with the idea of reporting and following up the findings of the surveys. A central committee, composed of the leading citizens and officials of each city, was appointed to take charge of the local survey. Preceding and during the field work, widespread publicity was given to the purpose and nature of the survey, and an attempt was made to interest all the citizens. By means of newspaper stories and editorials, addresses to representative organizations, observance of a Health Sunday and other educational and publicity methods, interest in the public health and particularly in the survey, was aroused to an unusual degree.

At the completion of the survey, a preliminary report was immediately made to the central committee. This report was read to the assembled committee, and a copy of it left in its care. The report outlined briefly the findings of the survey, and enumerated the most important recommendations. Later, a full and complete report, including tables, charts and photographs, was made to the central committee.

The central committee was composed of representatives from the city administration, the health department, the board of education, the chamber of commerce, the various civic organizations, the county medical society, the charities, the churches and the voluntary health organizations. During the survey the authors appeared before the central committee and other representative groups in the community and acquainted them with the nature and progress of the survey, and to some degree also, with some of its findings. Much was done during the survey to preach healthy living, both in the public addresses and through the articles in the daily press.

Not only can the public health survey be a powerful agent in stimulating an enlightened public interest in matters pertaining to the public health, and in disseminating knowledge about healthy living at a time when the people are par-

ticularly receptive for such information, but it provides the most effective means for ascertaining the exact status of the conditions affecting health in the community. Health officers have been preaching the necessity of periodic medical examinations for individuals. It is equally necessary for communities to have periodic health examinations, and while the period of examination need not be as frequent, the examination must be regular and thorough. Doubtless the time is coming when the public health survey will be incorporated as one of the regular periodic duties of a health department, just as stock taking is a regular function of any intelligently operated business enterprise.

In order to determine the most efficient method for the expenditure of the public funds at his disposal, as well as to adopt an intelligent and well-balanced program, the health officer must be intimately acquainted not only with the amount of disease and death, but also with the status of the conditions affecting the public health. This information can only be obtained through the agency of the public health survey.

The large number of public health surveys which have been made during the past five years alone, is but an indication of their importance and value in promoting the public health campaign. Health workers will necessarily have to use the survey more and more in the future, not only to get at the facts, but to aid them in moving the public and the officials of the city, the state, and the nation to increased activity for promoting the public health. The Harvard Technology School of Public Health requires every student to submit a public health survey before obtaining the Certificate of Public Health. It does so because it recognizes the great value of the public health survey as a means of testing out practically the knowledge of the students; and also because it realizes the increasing importance of the public health survey as a weapon of the health

officer in ascertaining the facts regarding the health conditions in his community; and finally, because the survey has great value in bringing about sanitary reforms.

What, however, are the benefits to be derived from the survey after it is completed? First of all it must be stated that the results of a public health survey are often intangible and very difficult to measure. In many instances the immediate results may be practically *nil*, yet the survey stands as a program which is likely to be gradually accomplished in the future. An analysis of the after effects of a large number of public health surveys conducted in this country indicates clearly that many of the improvements in health administration following the survey, are due to the stimulation of health and other governmental authorities during the survey.

In general, the post-survey results depend on the efficiency and persistence of those in charge of carrying out the recommendations. Where no special effort is made toward this end, few immediate benefits can be expected. The experience of the authors shows that with proper follow-up work, many recommendations made in the survey report can be adopted soon after the survey, but that the degree to which the recommendations are introduced, varies directly with the intensity of the organization for this purpose. It is not enough to collect the information required for a complete and comprehensive survey report, but wherever possible post-survey activities should be assured in order to obtain tangible and lasting results.

In Glen Ridge, for example, a full-time, well-trained health officer was appointed, following the recommendation of the survey report. In addition the director of the survey was asked to remain after the survey was over, in order to remedy the defects that were brought to light. By several visits to the dairies, many important sanitary changes were introduced. By repeated inspections and

by education, fly-breeding places were practically abolished. In one case, it required a special experiment to prove that flies come from maggots found in manure, before the fly breeding manure heap was removed.

In the Oklahoma City public health survey, the chamber of commerce assumed the responsibility of carrying out the recommendations in the survey report. A public health committee of 35 prominent business men was appointed to consider the findings of the survey with the city health authorities. The large committee of 35 was divided into sub-committees on water, milk, sewage and garbage disposal, health department organization, and tuberculosis. These committees have been meeting regularly for a year and a half, studying the particular subjects assigned to them and reporting back to the general committee. In one or two instances the sub-committee pursued its study even more intensively than was attempted in the original survey.

The following are some of the more direct results of the health survey in Oklahoma City:

The Health Department was reorganized according to a slight modification of the plan recommended in the survey report. The health officer in office during the survey, was replaced by another, more efficient and better trained. The incompetent milk inspector was discharged and the work placed in charge of the city chemist, who is thoroughly trained along these lines. Inspections and analyses of the milk supply have since been frequently made. Much publicity has been given to the laboratory findings, and reports indicate a steady improvement in the quality of the milk supply. A full-time, trained superintendent has been placed in charge of the water purification plant, according to the recommendation of the survey, and has replaced one who was untrained. A great improvement in the keeping of the vital statistics has been brought about,

and the City Health Department in conjunction with other health agencies is now publishing a monthly health bulletin. Appropriations for preventive health work have increased greatly each year and the Health Officer has been ably assisted in his requests by the public health committee of the Chamber of Commerce. Other improvements which might be mentioned are the suggested plan for the centralization and coördination of public health nursing activities, the appointment of a full-time school medical inspector, and the much more general interest on the part of the public in city health activities.

The following are some of the results obtained from other public health surveys.

In 1913 Franz Schneider, Jr., of the Russell Sage Foundation in New York, conducted a public health survey of Newburgh, N. Y. Newburgh had suffered from an exceedingly high typhoid fever death rate for years. As a result of the investigation, it was recommended that the water be chlorinated. At first the water board objected, but after Mr. Schneider's recommendations were re-enforced by water experts whom the city water board called in, the water supply was treated with hypochlorite. The Clinic in the Boston Transcript* for June 28, 1916, says: "The survey report (of Newburgh) was presented May 7, 1913. In June, the water board advised consumers to boil the water, and in October of the same year, the permanent hypochlorite plant was authorized."

The following table was quoted, showing that the typhoid death rate fell immediately after the water was disinfected. (See top of next column.)

Shelby M. Harrison, Director of Surveys and Exhibits for the Russell Sage Foundation, quotes the following in his pamphlet on "Community Action

TYPHOID DEATH RATES PER 100,000
POPULATION FOR NEWBURGH, N. Y.

Year	Rate
1908	40.3
1909	50.8
1910	46.6
1911	42.6
1912	42.2
1913	27.8
1914	24.1
1915	20.5

Through Surveys," concerning the results obtained from the Springfield, Ill., and Topeka, Kan., surveys:

"The events which pretty clearly had their beginning in survey recommendations,—or at any rate, the advances made in the community since the survey,—which had been specifically recommended by the survey, no matter what other agencies had also helped," are as follows:

FOR SPRINGFIELD, ILL.

1. Infant hygiene work started.
2. Announcement made of a movement on foot for new contagious disease hospital facilities.
3. The Tuberculosis Association re-organized itself and its work, placing more emphasis upon educational features.
4. Free dispensary established at St. John's Hospital.
5. Publication of the milk inspections, scorings of milk dealers started, and an improvement in the milk situation is claimed.
6. The lighting, ventilation and general sanitation of all the schools given attention and greatly improved. Fire exit locks have been placed on all outside doors, and fire escapes on the high school.
7. The new school buildings in course of erection, meet much higher standards with respect to lighting, heating, ventilation and sanitation.

FOR TOPEKA, KANSAS.

1. Full-time health officer, a specialist in public health and sanitation, secured.

*The authors are indebted for this information and that regarding Springfield and Topeka, which follows, to Mr. Shelby M. Harrison of the Russell Sage Foundation. Grateful acknowledgment is hereby made.

2. New and more able milk inspector secured, and improvement in the milk situation reported.

3. Health department laboratory, with laboratory worker established.

4. East-side sewer system in the largest unsewered settled area in Kansas, provided for and built. Cost, \$150,000.

5. Development of infant hygiene work by the Public Health Nursing Association.

6. First printed annual report of the Health Department issued.

Another important example of beneficial results obtained through the agency of the public health survey, is the case of the Framingham Community Health and Tuberculosis Demonstration. Although the Demonstration was primarily interested in the study of tuberculosis, it attacked the problem from the standpoint that general health conditions affect the prevalence of tuberculosis. One of the things it did was to conduct a public health survey of Framingham.

In a special report to Surgeon General Rupert Blue of the U. S. Public Health Service, made by the Committee on Appraisal, and published by the Framingham Community Health Station in October, 1919, the committee which consisted of Dr. Allan J. McLaughlin, Chairman, Professor C.-E. A. Winslow, Secretary, and many other prominent public

health workers, reported in part as follows:

"Even more important from the practical standpoint has been the notable development of public health work in Framingham along a wide variety of lines. The local health department has grown to be a strong and effective one, and the system of medical inspection of school children, organized under the Department of Education, represents one of the best examples of such service to be found in the United States.

"It seems clear that if the Framingham Demonstration should cease on January 1, 1920, the local community will have benefited materially, and many important contributions will have been made to the practical control of tuberculosis."

It may be concluded that the public health survey has a distinct place in the public health campaign, and its value lies along the following lines:

1. As a force in stimulating active public interest in the conditions affecting health in a community.

2. As a strong agent to promote public health education.

3. As the best and only means for determining the exact status of health conditions in a community.

4. As a powerful weapon for introducing health improvements.



English Health Council.—It is an encouraging "sign of the times" to note the formation of a "Health Council" for Maidstone, England, and the surrounding district. This council consists of fifty members, in part drawn from the medical profession and in part drawn from the laity. The functions of this body will be to promote coöperation between the various activities concerned with the health of the public, to initiate plans and to make recommendations, to receive for consideration suggestions and to place itself in communication with other health councils formed in the county. For prac-

tical procedure the council is divided into eight divisions, one of which is a propaganda division. In an apparent attempt to include all interested agencies it might be argued that this council is too large for effective work, but the development of its activities may be watched with interest by those in this country who are concerned with the formation of health coördination committees and similar bodies in connection with health centers or other local coördinating and education movements.—*Edit., Med. Officer*, Sept. 25, 1920. *H. N. C.*

SYMPOSIUM ON SMALLPOX

I. INTRODUCTION

The JOURNAL presents this month the symposium on smallpox together with the kindred paper on animal experimentation read at the San Francisco meeting of the American Public Health Association. These papers had a special significance at the West Coast in that the questions of vaccination or animal experimentation were at that time before the people of two states for popular vote. The result of the vote in defeating the opponents of both scientific procedures is well known. The papers have still their educational value, more particularly at the present moment when the question of an invasion of the country by smallpox is discussed by the highest authorities. The papers here presented are those of Dr. Force, Dr. Hastings, President Wilbur, Mr. Rowell, with Dr. Heiser's additional discussion, together with Professor Whipple's paper on "The Value of Animal Experimentation to Mankind." To these items Surgeon General Hugh S. Cumming, U. S. P. H. S., adds a brief editorial and there is given Dr. Roper's account of a recent outbreak at Portsmouth, Va., with a striking chart which shows the distribution of cases from three of the original foci.

In connection with the smallpox papers the JOURNAL presents facsimiles of both pages of the very rare broadside by Increase Mather entitled "Several Reasons." This is possible through the courtesy of its owner, Mr. William Winn Mather of Cleveland, Ohio, a leading collector of Matheriana in the country. This broadside, of which Mr. Mather possesses the only known copy, is of highest interest, outlining as it does the introduction of the practice of inoculation into New England. It was brought into notice by Mr. George H. Sargent, who, in the *Boston Transcript*, chronicled its coming sale among the Matheriana of Francis W. Fabyan. "Readers

of Colonial History," writes Mr. Sargent, "are familiar with the controversy which raged in Boston regarding inoculation for the smallpox. Probably no single influence was greater in bringing into favor this innovation in medical practice in the Colonies than Increase Mather. He issued a broadside in favor of it which was widely distributed. But broadsides are easily destroyed and soon forgotten after serving their purpose. So, more than two hundred years have passed since a copy of the broadside by Increase Mather has been seen bearing the title, 'Several Reasons Proving that Inoculation of Transplanting the Small Pox is a lawful practice and that it has been Blessed by God for the Saving of many a Life.' It is a small folio of two pages, and is apparently unique, no copy being in the great collections of Matheriana."

At the sale the broadside was purchased by Mr. Mather for his own library, where it now rests. It is of sufficient interest to be reproduced in its text, as well as in *facsimile*, since the old-fashioned typography reduced to the size of the JOURNAL page may easily be illegible to many. The text is given in No. 133 of this symposium.

The Mather broadside is of 1721, and antedates Jenner's practical application of the principle of vaccination by 75 years. The inoculating material was therefore the smallpox virus itself, and the method had been coming west for no one knows how many years or centuries.

The Chinese used smallpox vaccination at an early date. It was known in Constantinople certainly as early as the seventeenth century, and from that city it seems to have spread over Western Europe, and early in the eighteenth century was in use in England. Mather asserted that the story of inoculation with smallpox was told to him by Africans who had come to this country.

SYMPOSIUM ON SMALLPOX

II. EPIDEMIOLOGICAL STUDY OF SMALLPOX IN CALIFORNIA

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Read before Laboratory Section, American Public Health Association, at San Francisco, Cal.,
September 16, 1920.

IN 1911 the California Legislature passed an act repealing an existing statute which had provided for the compulsory vaccination of school children. The new law, which was entitled "An act to encourage and provide for a general vaccination for all public and private schools of California," contained the following provisions:

1. Any person attending or employed by any educational institution in California shall file (a) a certificate, signed by a physician, of successful vaccination within the seven years preceding the date of filing, or (b), a certificate, signed by the local health officer, that evidence has been presented of a successful vaccination within seven years, or (c) a certificate, signed by a physician, that vaccination would endanger the life and health of the person, or (d) a certificate, signed by a physician, that the person "had used due diligence and can not be successfully vaccinated," or (e) a statement, signed by himself, if an adult, or by a parent or guardian, if a minor, stating that the person, parent, or guardian "is conscientiously opposed to the practice of vaccination." The "endanger health" and "due diligence" certificates and the "conscientiously opposed" statement must be renewed annually.

2. The form of vaccination certificate is prescribed as well as the form for statement of conscientious opposition to the practice of vaccination. The latter form must be furnished by the local school authority. Persons entering the schools must file one of the five certificates within five days or be excluded

from attendance until such certificate is filed.

3. The certificates received by the school authorities are turned over to the local health officer, who makes a list of the vaccinated and unvaccinated persons returning the vaccination certificates to their owners and retaining the certificates and statements subject to annual renewal.

4. If smallpox appears in any school district, the State Board of Health is required to investigate, and, if smallpox does exist in the opinion of the State Board of Health, all persons who have not been vaccinated within seven years shall be excluded until vaccinated, or until smallpox shall cease to exist in the district. The state board also has power to subdivide the community and allow unvaccinated children to attend school in subdivisions in which no smallpox exists. The actual exclusion of persons is done by the school authorities on receipt of a certificate, signed by the local health officer, as to the existence of smallpox in a school district, accompanied by a list of the unvaccinated persons to be excluded.

5. Any private school may at any time exclude all unvaccinated persons therefrom.

It is the purpose of this paper to show wherein this act is faulty from both the immunological and legal standpoints, and to present a study of the incidence and distribution of smallpox in California, with especial reference to the ages affected by this enactment.

The object of vaccination is to pre-

vent or modify smallpox in the individual. Immunity to smallpox has been shown to be of longer duration than immunity to vaccinia. A community of persons immune to vaccinia, therefore would be immune to smallpox. There is only one way to determine the state of a person's immunity to vaccinia, and that is to vaccinate with fresh cold virus and observe the site for one of three reactions: primary vaccinia, secondary vaccinia (vaccinoid), or the immune reaction. Failure to secure one of these three reactions is due to faulty technique or inert virus, and the vaccination should be repeated until one of the reactions is observed.

The possession of a well-defined vaccination scar is not evidence of immunity to vaccinia, nor is its absence evidence of susceptibility. Kitasato found that 14% of persons successfully vaccinated may be successfully revaccinated after one year. On the other hand, persons giving no history of smallpox, and showing no vaccination scar sometimes show the immune reaction on vaccination.

It is manifestly impracticable to insist on the vaccination of every person entering school, and we therefore are justified in accepting the vaccination scar as reasonable evidence of immunity to smallpox without reference to any mystic number seven. At the university we vaccinate all unscarred entrants and excuse all those with scars. We began this practice in 1906, and since that year we have had no smallpox in the student body.

Instead, therefore, of providing for five different certificates the vaccination act should provide for the listing of school children showing no vaccination scar. A certificate should be provided for those persons showing no scar but giving the reaction of immunity on vaccination, and this group should be removed from the list of unscarred persons.

The presence of a vaccination scar

should render unnecessary the certificates (a) and (b). If a child's health is endangered by vaccination, he is too ill to go to school, so we do not need certificate (c). The "due diligence" certificate (d) would automatically disappear as physicians learn that there is no such thing as a failure if cold fresh virus is used. The writer vaccinated 300 entrants, with no scars but histories of one or more previous vaccinations, securing 297 primary vaccinas.

After disposing of the four preceding groups, we have still to consider the conscientious opponents of vaccination. At the university we ignore them; and this could be the attitude of any other school in the state, for the question is purely a legal one.

Shortly after the passage of the vaccination act, a young man offered conscientious opposition when informed that vaccination was a university entrance requirement. He was refused admittance on the ground that the university was a private school, and could exclude any unvaccinated person. Mandamus proceedings were instituted and the Superior Court held that, while the university was not a private school, the vaccination act was unconstitutional, as it discriminated between persons on a basis of belief, imposing certain requirements on one group and exempting another from such requirements. The case was carried to the Appellate Court (*Williams vs. Wheeler et al.* Decision Civil 1226. First Appellate District California Appellate Decisions, vol. 18, page 51) which ruled that, while under its police power the legislature could pass an act to promote vaccination, which was a well-established health procedure, it could not in the same act insert a clause, not founded on a consideration of health, which would tend to prevent the operation of the act. The Court, therefore, decided the case in favor of the university.

Unfortunately the illegality of this section of the act is not generally known

throughout the state and school authorities have followed the line of least resistance. As one school principal expressed it: "A parent brings a child to enter him in school, and I tell her that the child must be vaccinated. She asks if there is any way out of it, and I give her one of the 'conscientiously opposed' forms to sign." The act, you will remember, provides that these forms shall be *furnished* by the school authorities, and this is easily construed to mean *distributed* to children to be taken home for signatures. With the trouble and expense of a vaccination on one hand, and a simple signature on the other, is it any wonder that our State Board of Health has recently estimated that 80% of our school children are unvaccinated?

The opponents of vaccination claim that this figure represents popular sentiment toward the practice, but it is remarkable how quickly the opposition disappears when unvaccinated children are excluded from school. In Berkeley, in 1913, out of 2700 unvaccinated children excluded, only 200 had parents with consciences sufficiently strong to keep them at home unvaccinated until the end of the epidemic. A case of smallpox appeared in a school district in Berkeley during the early part of 1920. Approximately 500 children attended the school, of whom 300 had opposition statements on file. Only one case of smallpox occurred, and the unvaccinated children were allowed to return in two weeks, but during that time half of the excluded group had been vaccinated. This does not look like a very determined opposition, but rather an indifference fostered by careful provision in the law that the line of least resistance shall be away from vaccination. Now the opponents of vaccination propose to remove even the discomfort of having unvaccinated children at home during a smallpox epidemic, for an initiative measure is to be voted on at the next election which is designed to prevent making vaccination a condition of en-

trance into any school in California.* Should this measure carry there will be another epoch more interesting than the present one in the smallpox history of California. Should it fail we shall still have the defects of the present act to reckon with.

The most simple procedure then during a smallpox epidemic, would be to exclude all unscarred persons not proven immune, until the evidence of immunity is forthcoming in the shape of a vaccinia, a vaccinoid, or a certificate of the observation of the immune reaction. No other certificate should be accepted.

The law should be very clear regarding the power of the school authorities to transfer a child from a subdivision where smallpox exists, to one that is free from smallpox. At present this question is open.

The presence of 80% of unvaccinated school children in the population of California is responsible for an interesting tendency in the morbidity statistics of smallpox.†

For the purpose of this study, the smallpox cases reported to the State Board of Health by ages, during the years 1916, 1918 and 1919 were distributed as shown in the accompanying table (Table I). The rate per thousand of the population was then computed for each age, using the following population estimate based on the 1910 census:

Year	Population	Factor
1916	2,938,654	.00034
1918	3,119,412	.00032
1919	3,209,791	.00031

A barograph was then constructed for each of these years, using ages and case

*This measure was defeated by a majority of 108,924 votes.

†These statistics refer only to cases reported by ages. The total number of cases reported was as follows: 1915, 91; 1916, 248; 1917, 329; 1918, 1,100; 1919, 2,053; and 1920, 4,486. Vaccination histories secured from 4,226 of the 1920 cases gave: Never vaccinated, 92 per cent; vaccinated more than five years ago, 7 per cent; vaccinated during last five years, 1 per cent.

TABLE I.
DISTRIBUTION OF SMALLPOX
CASES BY AGES

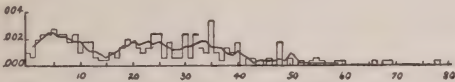
Age	1916	1918	1919	Age	1916	1918	1919
1	3	6	21	41	..	5	14
1	2	9	25	42	2	10	27
2	6	2	13	43	2	3	8
3	7	3	38	44	..	5	8
4	7	21	47	45	..	10	16
5	8	10	35	46	2	4	13
6	7	21	61	47	..	6	10
7	7	24	55	48	5	3	12
8	5	29	63	49	..	6	6
9	7	20	67	50	2	5	22
10	3	20	64	51	..	5	6
11	5	17	44	52	1	4	10
12	5	18	67	53	..	5	8
13	2	14	33	54	1	2	8
14	1	18	42	55	2	3	10
15	1	16	40	56	1	..	6
16	3	16	41	57	..	..	5
17	2	15	25	58	..	3	4
18	4	19	40	59	1	3	3
19	6	12	32	60	1	4	13
20	5	16	30	61	..	1	1
21	4	12	25	62	..	..	1
22	3	7	22	63	..	1	3
23	4	6	22	64	..	..	2
24	7	8	19	65	..	..	1
25	7	16	20	66	1	2	4
26	2	7	15	67	..	1	3
27	5	5	15	68	1	..	2
28	2	17	22	69	1	..	1
29	2	13	9	70	..	..	1
30	7	17	40	71	..	..	1
31	2	6	20	72	..	..	1
32	7	16	12	73	..	..	..
33	4	5	15	74	..	..	1
34	3	8	21	75	..	..	1
35	10	23	46	76	..	..	1
36	3	10	20	77	..	..	..
37	1	15	14	78	1	..	1
38	4	16	20				
39	3	7	17				
40	5	23	48		205	654	1,560

Chart I

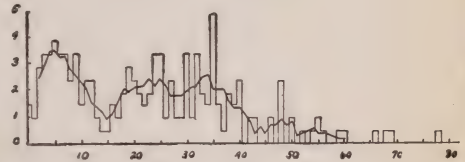
SMALLPOX IN CALIFORNIA AGE DISTRIBUTION

Case Rate per Thousand

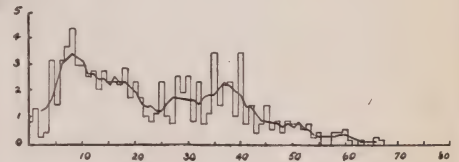
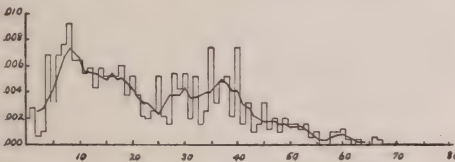
1916



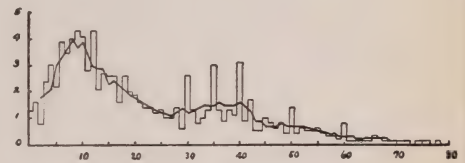
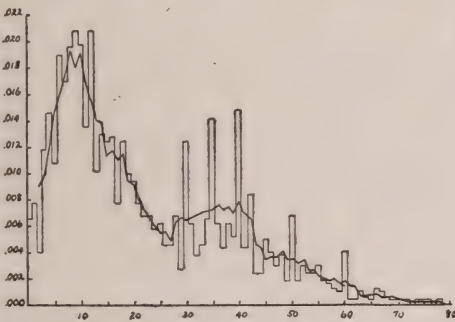
Percentages



1918



1919



Ages

Ages

rates for coördinates. In order to eliminate the error of round numbers, a moving five year average was superimposed on the barograph. The total cases for each of the three years was taken as 100%, and the distribution by ages computed as percentages. Barographs were constructed and moving five year averages superimposed as in the distribution by case rates. Finally, cumulative percentages were computed for each year, and the cumulative percentages plotted and superimposed. The results are shown in the accompanying charts. (Charts I and II.)

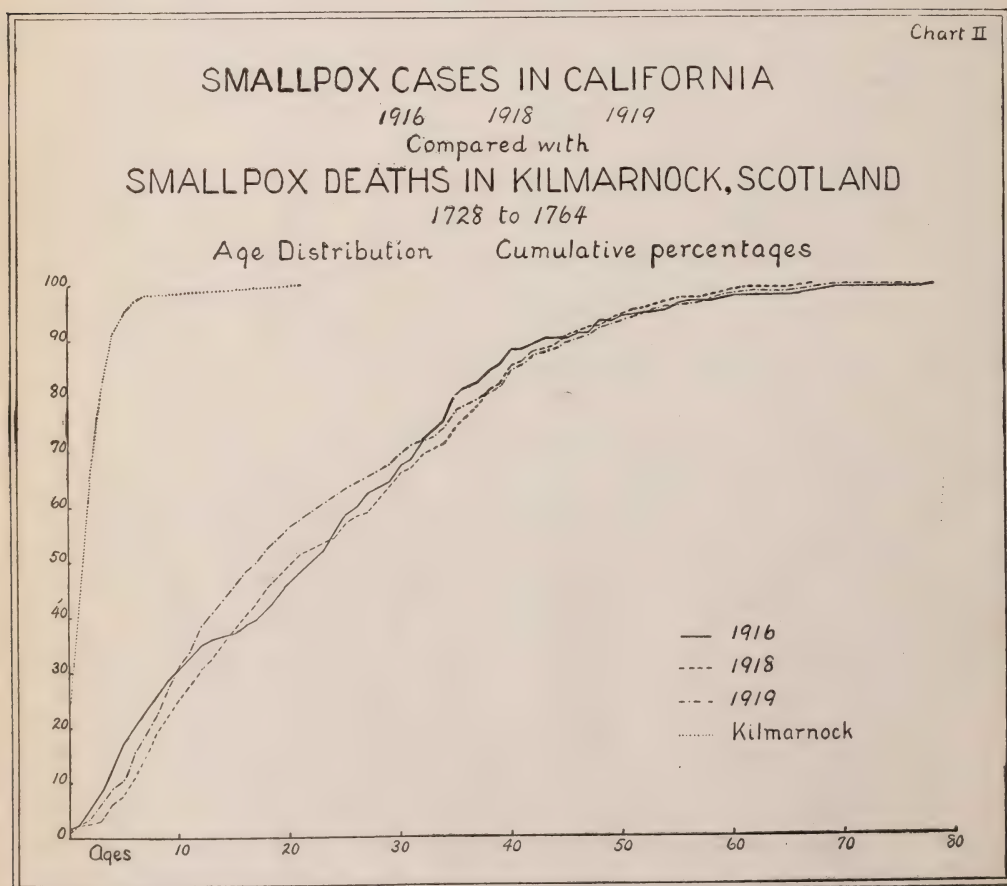
A comparison of the three curves of distribution by ages of case rates per thousand, shows that each curve is composed of two rather distinct waves. In 1916 the first peak occurred at age 5, the hollow at age 15, and the second peak at age 33. The height of the second peak was 75% of that of the first peak. In 1918 the first peak was at age 8, the hollow at age 25, and the second peak at age 38. The height of the second peak was 60% of that of the first peak. The first 1918 peak was three times as high as the first 1916 peak, the second 1918 peak was two

and one-half times as high as the second 1916 peak. In 1919 the first peak was also at age 8, the hollow at age 27, and the second peak at age 40. The height of the second peak was 40% of that of the first peak. The first 1919 peak was 8 times as high as the first 1916 peak, the second 1919 peak was four times as high as the second 1916 peak. In other words, between 1916 and 1919, the maximum adult case rate increased four-fold, and the maximum children's case rate increased eight-fold.

A comparison of the three curves of distribution by ages of percentages of cases shows that in 1916, 37% of the cases occurred in the first or children's wave; in 1918, 57%, and in 1919, 65%.

The superimposed cumulative curves of percentages show at a glance the tendency of the disease. In 1916 the curve rises uniformly until age 11, where there is a decided lag, due to the large number of school children protected by compulsory vaccination previous to 1911. This lag is overcome by age 40, and the rest of the curve is practically coincident with the curves of 1918 and 1919. The 1919 curve shows no tendency to flatten until after passing age 17, and then the lag is very slight, being greatest at age 35 and practically overcome by age 40. These curves also show that 50% of the smallpox cases in 1916 occurred before age 22; in 1918, before age 20, and in 1919, before age 17.

From this study we see that in three



years in the presence of a steadily increasing population of unvaccinated school children, smallpox in California, though mild in type, has shown a tendency to assume the well known characteristics of pre-Jennerian days, and become primarily a children's disease.

Unfortunately we have no pre-Jennerian morbidity analysis by ages for comparison with the California figures, but mortality figures are not lacking. McVail in his "Prevention of Infectious Diseases" has analyzed a register kept by the parish schoolmasters of Kilmarnock, Scotland, between 1728 and 1764. This village of 4,200 population was visited during this time by nine epidemics of smallpox, causing 16% of deaths from all causes. The epidemics occurred on an average of once in four years, the mortality being distributed as follows:

Under age 4, 89%, ages 4 to 8, 10%, over age 8, 1%.

The mortality figures of McVail have been distributed by ages and plotted as cumulative percentages on the same chart with the cumulative percentage curves of California morbidity (Chart II). This Kilmarnock curve is the age distribution limit toward which the California morbidity curves are rapidly approaching.

The opponents of vaccination have succeeded in developing a school population, 80% unprotected against smallpox. The result is evident from the morbidity statistics. Let us devote ourselves as health officials to furthering the use of cold, fresh smallpox vaccine, in order that those persons with intelligence enough to request protection shall not be disappointed in the attempt to secure it.



She Certainly Is Welcome

The January JOURNAL, page 67, left the community nurse knocking at the door of a humble house, and the question was asked, "Will she be welcome?" Here is the answer, and it is the answer that the experience of any public health nurse repeats over and over.

The door opens, the woman of the house appears, not American-born as one may see by her features, her stout coat and her closely wrapped head. But the smile that is in all languages is on her face and her extended hand tells the rest. It is very true that foreign races are suspicious, but it is further true that they are not slow to recognize sympathy and helpfulness. The public health nurse has proved herself to be the friend of the household in moderate circumstances and of the neighborhood, and much of the extension of her work is through the information picked up in the living rooms of those she is helping.

The original comes to the JOURNAL through the courtesy of Florence Swift Wright, R. N.



SYMPOSIUM ON SMALLPOX

III. VACCINATION AND THE STUDENT

RAY LYMAN WILBUR, LL.D.,
President of Stanford University,
California

Read before General Sessions, American Public Health Association, at San Francisco, Cal.,
September 17, 1920.

I WISH to emphasize some of the lessons brought out in previous papers at this session, since they apply to this state and elsewhere, and to point out some of our responsibilities in connection with the public schools.

Now, there are a few things that I think we can consider as settled among reasonable people, although as was said, there are always those who will not believe certain things about medicine, science, and above all about vaccination.

In the first place, we know that vaccination protects the individual against smallpox. That protection lasts a variable period. We know that the people who have the greatest safety from smallpox infection are smallpox nurses and doctors who are repeatedly vaccinated, so that with that question settled we can go on to the next.

We know that any nation that will systematically vaccinate infants and repeat vaccination, can absolutely abolish smallpox from its midst, just as Germany did.

What is the method that can be used to control smallpox in such communities as ours? Shall it be by vaccination of a compulsory character? Shall it be by control of individual cases when smallpox occurs? Or shall we simply let the whole thing drift and pay no attention to it?

This is of particular consequence to us in California because we are near one of the great endemic foci for smallpox, Mexico. Smallpox there is often of a fatal character; we have no protection such as England enjoys by reason of her isolation. All this part of

the world will be exposed more or less to contact with smallpox patients.

California has a vaccination law that has a compulsory feature only in the presence of smallpox. The health authorities can then eliminate school children from the schools if they are not vaccinated. There is a great hubbub about this law. It is a natural thing, I suppose, that we should have a great deal of interest in any of these problems where personal rights are concerned and where we bring in clearly the question of how far the individual is responsible to the whole community.

That is a settled point if anybody will stop to think. We send off the individual male to have him shot any time we feel it is necessary for the protection of the community. We make personal right purely subsidiary to the rights of the community. But when it comes to a thing of this kind we begin to dispute it because of the belief on the part of some that vaccination does not protect.

What are we going to do about it in our schools? We have an initiative measure proposed that will make it impossible for any compulsion to be exercised. If we do not stop in some way the growth of the large number of unvaccinated children in the state of California at the present time (and this applies to many other states as well), it is inevitable that before long we shall have such a large unvaccinated population of children that we shall have a great epidemic. This will come about because history repeats itself. Smallpox is a disease of children, or used to be. The only way in America to control

smallpox is to get some kind of vaccination in groups or at certain ages and with us that means the schools.

Infant vaccination of the type practiced in England is impossible under our existing laws. Therefore, it is at the school age that this question comes up and has to be settled. It goes on through the school age, of course, into the college and university age, and some of us who have had experience with smallpox in colleges and universities realize that in the school it causes more disorder than almost anything else that is apt to take place, because of the public fear connected with this disease, due to the age-old terror of such epidemics.

View your community for a while: Smallpox breaks out; half of the children are found vaccinated and half unvaccinated. Under the present laws the Health Officers can send away the children from schools who are not vaccinated and keep the schools open for those who have protection, but not for the others.

Under the new plan, if this initiative measure passes, they could do nothing of the kind. We may say, as many do already, let the children of those who haven't enough sense die and after a while you will have a generation that has enough sense to believe in vaccination. But it is a little rough on the children. They are not responsible for their parents; many would have chosen otherwise, no doubt, if they had the opportunity. So we can't put the burden on the children. We must put it on the community and make it our principal responsibility to protect those children, to save their lives and save the community from all these things that go to make up what we know as a "smallpox epidemic."

My feeling is that the California law as it exists at the present time has great elements of danger and is the extreme limit we can go with any real concern for the safety of our children. If we wish to reap the whirlwind we can reap it by passing this new measure. We can get our lesson which will cost us thousands of dollars and thousands of lives; and each generation can learn this thing over and over again as time goes by. But if there is anything in education and in civilization it is to learn from the lessons of the past, and the lesson of the past in regard to smallpox is easy to read and easy to understand. The difficulty is that the common sense man doesn't argue about it but the crank will and will keep it up, and until real difficulty comes the ordinary man takes no interest.

The great danger that we have in public preventive medicine is the fact that it works; consequently people think that it has not been necessary. A distant danger is not appreciated. One near at hand causes a panic; so that the more effective these public health measures become the more easy it is to oppose them, to make them appear unnecessary, and that is particularly true in regard to smallpox.

It all gets back, therefore, to common sense. Shall we learn by the lessons of the past? Shall we protect our school children? Shall we protect their future? Shall we hold together what we have now in the way of vaccination regulations? Or shall we give way entirely to the pressure of certain individuals, well-intentioned, no doubt, but incapable of scientific understanding or reasoning who insist that the right of the individual is superior to the right of the community?



Take Notice! The Fiftieth Annual Meeting of the A. P. H. A. will be held in New York City, November 14-18, 1921.

SYMPOSIUM ON SMALLPOX

IV. MEDICAL AND ANTI-MEDICAL LEGISLATION IN CALIFORNIA

CHESTER H. ROWELL,
*Editor of the Fresno Republican,
Fresno, Cal.*

Read before the General Sessions, American Public Health Association, at San Francisco, Cal.,
September 17, 1920.

YOUR incoming president spoke of the importance of realizing that public health is not simply the business of the physician. So I appear before you, not as a physician, but as a newspaper editor and practical politician to talk to you of the political aspects of this case. In other words, I propose to make to you a political speech, upon immediate political issues as they exist in California at this time, and as in one form or another they chronically exist in all our states.

The mere existence of cults, of irrational attitudes toward life, is not of public importance until these cults go into politics. If the Holy Rollers, for instance, think they can save their souls by going through their gyrations, then, so long as they do not unduly disturb the public peace they have the religious liberty to roll. But if the Holy Rollers were to go into politics, to pass laws to compel the rest of us to roll, then the activities of that cult would become of public importance. What I wish to emphasize to you, then, is that there are cults (and I refer not merely to the principal religious sect among them, but to numerous religious, philosophical and social cults) which are actively in politics to obstruct health measures and promote anti-health measures on our statutes, and that the only remedy for their politics is for us to go into politics against them.

There is a peculiar psychology in it. You have heard Dr. Whipple speak of the importance of emphasizing that medicine is a science. That is not enough. We are dealing with people who think that the mere demonstration that med-

icine is a science is nothing to its credit. They do not believe in science nor in the validity of scientific method. We have to begin further back, and educate people to realize that there is such a thing as science, that it is based on facts, and that facts are important.

Going back over the history of human thought, you find that men began with imagination and faith. Then poets and priests ruled us, because they deal in imagination and faith. Gradually we went on to the age of argumentation, which in the Middle Ages ruled even religion and in part of the eighteenth century dominated even poetry. Then the lawyers and politicians ruled us. Governmentally we are in that stage yet. Our laws, our legislative and judicial procedure and most of the conduct of our lives are still based on it.

Only late in the development of the intellect do we reach the Age of Finding Out. That is the scientific attitude, which few people have even yet reached, in regard to medicine or anything else. So it becomes necessary to train our people to recognize facts as facts and evidence as evidence, and to realize that when a fact is established by evidence, that is something important.

You will meet, for instance, in your discussions of all these things, arguments such as I heard today at lunch from one of the most important men in California, on vivisection. This man was opposed to it, partly because he denied the hypothesis that men are more important than dogs, and partly because, since "vivisection" is torture, no evidence that it is not torture is to the point.

This was an intelligent man. If he was capable of that attitude, what shall you do with the unintelligent? For we have this peculiar psychology, which is sometimes organized into cults, but which also floats around through the intellects of thousands of unorganized people who are amenable to the sentimental propaganda of these cults. If it were merely the organized cults we should need only to organize to outvote them. But when these organized cults, most of whose members are themselves beyond education, proceed to miseducate the others, then it becomes necessary for us to do some counter-educating.

The immediate illustrations here in California—and though many of you are not from California, I think these California illustrations will be of significance to you all—are the four anti-health measures now on the ballot and to be voted on by the people of California this fall.

One of them is the anti-vaccination measure. That measure is significant in itself and still more significant in its source. As now on the ballot it has been reduced to a mere anti-vaccination measure. What it was in the beginning and still is in ultimate intention I will tell you in a minute. As an anti-vaccination measure, it has two purposes. One, as has been pointed out to you, is to forbid the health officers to exclude from the schools non-vaccinated children even in time of epidemic. The other is to get at the universities. You see, they can get at the legislature and scare the legislators into passing laws; but, unfortunately for them, the constitution confers the legislative power over the university not on the legislature but on the regents, and the regents are appointed for sixteen years. I have just been reappointed and my present term runs out in 1936. Meantime it is presumed to be a matter of complete indifference to me what the people think about my conduct—and if I were

that sort of a man there might be something in the presumption.

The health authorities of the university commit what these cultists allege to have been decided by the Supreme Court to be assault and battery on the students, by vaccinating and physically examining all of them, conscientious objectors included. Any student who will not submit to that assault and battery cannot receive a free education in California from the University of California. I am not sure about Stanford. Yes; Dr. Wilbur says it is even worse at Stanford. Obviously that sort of autocrats and aristocrats, who delight to defy the people and who serve for life—generally they are reappointed and each appointment is for sixteen years, while thirty-two years is a fair working life—are necessarily persons that the people must rise up against. Therefore they insist that constitutional authority be granted, compelling us to refrain from these assaults and batteries on the students of the University of California.

That, however, is the reduced minimum. It is what is left of what they started out to do. Let me tell you something of what they originally started to do, and what in Oregon they have actually done. The important part of this anti-vaccination law is not merely that it is an anti-vaccination law, but that it is the product of organized politics.

There is a political organization which announces that it is in politics and that it has raised a political campaign fund—therefore, I am saying nothing unjustified against it when I accuse it of politics—which calls itself the "Public School Protective League." I will read you its program, from a summary which I recently published, all its facts taken from the report of this League itself—though naturally the interpolated comments are my own.

"The League boasts that it procured the passage of laws exempting school

children from physical examination and excluding 'propaganda' (by which it explains that it means hygienic and physiological education) from schools, and secured the defeat of bills for teaching dietetics, home nursing and care of the sick in the schools, and for physical examination of school teachers, to see if they had diseases which could be communicated to the children; for the establishment of dental nurses, and for certificates of health to children granted work permits. It also opposed the bill for a bureau of child hygiene, to carry on the work of the Children's Bureau of the national government, and while it was not able to defeat this bill, it did succeed in getting it amended so as to make the examinations of the bureau voluntary. It protests that, under this law, the agents of the bureau are weighing and measuring children, and it is taking legal steps to prevent this invasion of medical freedom. In Los Angeles it secured the enactment of an ordinance which not only forbids the examination of any child, except upon its parents' consent, but also forbids lectures on pathology and disease. This latter prohibition is especially significant because it is not physical but educational. This minority, by political intimidation, has thus actually made it illegal in Los Angeles to teach in the schools the ascertained facts of health and disease. Also, it is illegal to look at the throat of a child suspected of having diphtheria, to see whether its condition is probably a danger to other children.

"It also obstructed and largely prevented the examination of children returning after the influenza epidemic in Los Angeles. It compelled the exclusion from the schools of a series of lessons on the influenza prepared by the State Board of Health and distributed by the Junior Red Cross, thus again obstructing education. It also stopped the writing of essays on the influenza by school children in Pasadena.

"It obstructed the 'health chore' sys-

tem of the National Tuberculosis Association in the schools and stopped the weighing and measuring of children in Redondo, Bakersfield, Baldwin Park, Sierra Madre, Porterville and other places, and prevented the introduction of this pernicious medication elsewhere.

"It also stopped lectures on hygiene in the Los Angeles high schools conducted by representatives of the War Camp Community Service and by the Y. M. C. A. and prevented the use of Red Cross funds in various places to pay the salaries of school nurses.

"It has a regular legal bureau which watches the schools everywhere and resorts to the courts, as well as to political influence, to stop every physical step for the protection of physical health matters against which it can possibly find any legal obstructive measures."

This is the program of alleged accomplishment of this League, taken from its own reports. Its initiative proposal, now reduced to an anti-vaccination measure, was originally much broader. In its original unreduced form it is on the Oregon ballot now, and it is the announced purpose of the organization to put the other half through in California, too, if this half passes now. As originally announced, it prohibited not merely the requirement of vaccination as a prerequisite for attending school, but the requirement of any sort of treatment or inoculation as a condition for any sort of activity, employment, privilege or right, anywhere. It would have prohibited any precautions against the employment of typhoid carriers in the handling of food. It would have prevented us from keeping typhus from coming in from Mexico or bubonic plague from China, or from keeping anything from spreading anywhere. It would have made impossible many of the most fundamental health protective activities. But, under advice, as a matter of tactics, they concluded to make two bites of it, and this time propose only this limited measure, covering vaccination alone.

That is enough for this particular measure. Another measure of which Dr. Whipple has spoken is the anti-vivisection law. Its form is particularly deceptive. On its face it seems to prohibit the "vivisection or torture" of a living animal. Obviously people do not want animals tortured. But concealed in the next clause is a definition that any physiological or pathological experiments for the purpose of physiological or pathological investigation shall be defined to be "torture, dissection and vivisection." In other words, if you take two dogs and feed one of them on meat and the other on dog biscuits, to find which one gets fat first, this law defines that feeding to be "torture, dissection and vivisection." Actually that is the sort of experiments that probably the huge majority of these "vivisectionists" do—though not necessarily with dog biscuits.

This law, if passed, instead of merely stopping a few obscure and highbrow investigations in a few laboratories, would actually make the price of pork prohibitive, by preventing measures to stop hog cholera. It would prohibit sacrificing a few hogs to save the lives, for a more useful death later, of many hogs. It would stop all anthrax experiments. It would ruin the olive industry by stopping the botulism investigations. It would make vaccination impossible even for those who wished it, because the vaccine could not be produced in California, and if imported from elsewhere it could not be standardized or tested in California. It would compel every child bitten by a mad dog, in the present prevalence of rabies in Central California, to die a horrible death from hydrophobia. It would condemn many children to choke to death from laryngeal diphtheria to save a few horses from a needle-prick. It would stop breeding experiments on animals but not on plants. You could breed long-staple cotton, but you must not breed long-wool sheep.

The man I was talking to today objected to all scientific experiments on

animals, and at that very moment he was eating oysters—and eating them alive. And he was pouring on their tender bodies strong citric acid, out of a lemon, and I think a little of the irritant essential oil of horseradish.

Such a law would have cost me my life at least three times in the last three years, to save three guinea pigs. I have just enough egotism to think that if my appetite was worth the life of the chicken I ate this noon, my life was worth the three guinea pigs it cost.

It would make certified milk impossible. It would obstruct not only the health activities, but the industrial activities of the state. It is the most extreme anti-vivisection measure ever proposed anywhere. That is perhaps one of the advantages of an initiative measure, from the standpoint of its opponents. When you propose a measure in the legislature it may be fantastic enough in the beginning, but if it comes out it is in a form that has survived discussion. When it is proposed by initiative it comes in the form that satisfies its proponents, which is rarely a form to satisfy the people. Consequently, most initiative measures, including some with a good purpose, are beaten. We have had that experience with prohibition legislation. Even people who believed in prohibition have in the past been compelled to vote against certain prohibition measures, because of outrageous features put into them to satisfy not the people, but their extremist proponents. Fortunately this measure is of the same sort, so fanatically impossible that every rational person—unfortunately there are many irrational ones—will vote against it.

There are two other measures on the ballot to which I will refer only briefly. One is the preposterous chiropractic measure, to permit the chiropractics to license themselves, practically regardless of education. There are 27 sects of drugless healers in California. Under the present law, any one of them who can show half the education required of

other practitioners can get a license now. That is reasonably liberal. Under this initiative they would not have to have even that half-education. If any of them cannot get licenses now it is because they do not have that half-education. They propose a licensing board for this one sect. The other 26 would have an equal right to separate boards. So long as people have the hallucination that there are sects in medicine, as there are in religion, one sect has as good a right as another. And it is scarcely worth while, in the present stage of public enlightenment, to try to explain that there is no such thing as sectarianism in medicine. But the people can understand that there is such a thing as education. They can understand, for instance, that there is no such thing as a chiropractic high school education, and that it takes no separate chiropractic board to find out whether a chiropractic applicant studied chiropractic mathematics or chiropractic Latin in a chiropractic high school. They might understand the same thing as to chiropractic chemistry, anatomy or physiology, and so they could realize that there is no sectarianism or anti-sectarianism in requiring these applicants to practice to show that they have education enough to be trusted to practice.

The public health aspect of it is this: If ignorant practitioners of any school are turned loose, persons who know only that they are sick will go to them. Some of them may have incipient or masked tuberculosis, or tuberculosis which is at first only incident to some other disease, without directly obvious tubercular symptoms. Under treatment, or in spite of the treatment, they may get better of

the other troubles, and only know that they are "better," without ever having learned that they also have tuberculosis, still in a curable stage. Later on, when the developing tuberculosis finally brings them under the Board of Health, it is too late to do anything. And the same thing is of course true of other diseases.

The licensing of ignorance to practice on the people is licensed murder, and it ought not to be permitted.

While I am on the subject I will refer briefly to another measure you Californians ought to be warned against. The last legislature properly passed a measure confining the right to possess and dispense narcotics, morphine and cocaine and hypodermic syringes to those people who are in any fashion licensed to administer drugs.

Certain drugless healers have held this up by referendum. They say while they are not allowed to administer epsom salts and quinine they should be permitted to administer cocaine and morphine. Some of them are Chinese quacks; some reputable individuals.

This would be licensing ignorance to manufacture dope fiends for your treatment afterwards.

These happen to be the four measures on the ballot in California. My purpose, however, in speaking to you was to urge the duty of those who believe not merely in medical science, but those who believe in any science, those who believe in truth, those who believe in facts, those who believe in evidence—in other words, those who have the rational attitude toward life, to recognize that while the irrational have the right to be irrational, if they go into politics we will, too.



The Symposium on Health Centers, including the papers read at the San Francisco meeting of the Association, are scheduled for the March issue of the JOURNAL.

SYMPOSIUM ON SMALLPOX

V. THE MATHER BROADSIDE

Several REASONS

Proving that Inoculating or Transplanting the *Small Pox* is a Lawful Practice, and that it has been Blessed by GOD for the Saving of many a Life.

By Increase Mather, D. D.

Exoc. XX, 13. *Thou shalt not kill.*

Gal. 1, 10. *Do I seek to please Men? if I please Men, I should not be a Servant of CHRIST.*

It has been Questioned, Whether *Inoculating the Small Pox* be a Lawful Practice, I inclined to the Affirmative, for these Reasons.

I. Because I have read, that in *Smyrna, Constantinople*, and other Places, Thousands of Lives have been saved by Inoculation, and not one of Thousands has miscarried by it. This is related by Wise & Learned Men who would not have imposed on the World a false Narrative. Which also has been published by the *Royal Society*; therefore, a great Regard is due to it.

II. We hear that several *Physicians* have Recommended the Practice hereof to His Majesty, as a Means to preserve the Lives of his Subjects, and that His Wise and Excellent Majesty King GEORGE, as also his *Royal Highness the Prince* have approved hereof, and that it is now coming into practice in the Nation. In one of the Publick Prints are these Words, "*Inoculating the Small Pox is a safe and Universally Useful Experiment.*" Several Worthy Persons lately arrived from *England* inform us, that it is a successful Practice there: If Wise & Learned Men in *England*, declare their Approbation of this Practice, for us to declare our Disapprobation will not be for our Honour.

III. GOD has graciously owned the Practice of *Inoculation*, among us in *Boston*, where some Scores, yea above a hundred have been *Inoculated*, and not one miscarried; but they Bless GOD, for His discovering this Experiment to them. It has been objected, that one that was *Inoculated*, died, viz. Mrs. D.; but she had the *Small Pox*, in the common way before, & her Friends and nearest Relations declare that she received no hurt by *Inoculation*, but was by a fright put into Fits that caused her Death. It is then a wonderful Providence of GOD, that all that

were *Inoculated* should have their Lives preserved; so that the Safety and Usefulness of this Experiment is confirmed to us by Ocular Demonstration: I confess I am afraid, that the Discouraging of this Practice, may cause many a Life to be lost, which for my own part, I should be loth to have any hand in, because of the *Sixth Commandment*.

IV. It cannot be denied but that some Wise and Judicious Persons among us, approve of *Inoculation*, both *Magistrates* and *Ministers*; Among *Ministers* I am One, who have been a poor Preacher of the Gospel in *Boston* above Threescore Years, and am the most Aged, Weak and unworthy Minister now in *New England*. My Sentiments, and my Son's also, about this Matter are well known. Also we hear that the Reverend and Learned Mr. *Solomon Stoddard* of *Northampton* concurs with us; so doth the Reverend Mr. *Wise* of *Ipswich*, and many other younger Divines, not only in *Boston*, but in the Country, joyn with their Fathers. Furthermore, I have made some Enquiry, Whether there are many Persons of a Prophane Life and Conversation, that do Approve and Defend *Inoculation*, and I have been answered, that they know but of very few such. This is to me a weighty Consideration. But on the other hand, tho' there are some Worthy Persons, that are not clear about it; nevertheless it cannot be denied, but that the known Children of the Wicked one, are generally fierce Enemies to *Inoculation*. It is a grave saying of Old *Seneca*, *Pesseme Argumentum Turba est*. For my part I should be ashamed to joyn with such Persons; O my Soul come not thou into their Secret, unto their Assembly be not thou United. I am far from reflecting upon all that are against *Inoculation*. I know there are very worthy persons (with whom I desire to Live and Die) that are not clear in their Judgments for it, and they are greatly to be commended and honoured in that they will not act against a doubting Conscience; yet it may be some of them might change their minds, if they would advise with those who are best able to afford them Scripture Light in this as well as in other Cases of Conscience.

Novemb. 20, 1721.

That the Cause may have Two Witnesses, here are subjoyned the Sentiments of another, well known in our Churches, of which I declare my hearty Approbation.

Sentiments on the Small Pox Inoculated.

A most Successful, and Allowable Method of preventing Death, and many other grievous Miseries, by the Small Pox, is not only Lawful but a Duty, to be used by those who apprehend their Lives immediately endanger'd by the terrible Distemper.

But the Method of managing and governing the Small Pox in the way of Inoculation, is a most successful and allowable Method of preventing Death, and many other grievous Miseries by this dreadful Distemper. Therefore, 'tis not only Lawful, but also a Duty to make use of it. None but very foolish, and very wicked People will deny the Proposition in this Argument; The Assumption is all that is disputed. But now, That this is a most Successful Method we have all the Evidence that Humane Reason can ask for.

Men of Honour, and Learning, and Incontestible Veracity, not one or two, but a considerable Number of them, agree in the Relation they give us, of it's being used with constant Success in the Levant. It has been used upon Vast Multitudes, even many Thousands, and for some Scores of Years; And when regularly used, it yet appears not, that ever one Person miscarried of it, or had the Small Pox after it. We have sufficient Proofs that it is a growing Practice in those Countries. If it had been unsuccessful, or been attended with bad Consequences, it must needs have been put out of Countenance, and have ceased long ago. Such Testimonies on the other side, as our People have been frighted withal, are not worth a Straw. No Man of sense that considers them can lay weight upon them: Ask us not, why we say so!

And we have an Army of Africans among our selves, who have themselves been under it, and given us all the Assurance, which a Rational Mind can desire, that it has long been used with the like Success in Africa. Yea, Behold, ye yourselves have seen it. The Operation has been performed on an Hundred & more, in the Town of Boston: And not one of them has miscarried: They have every one of them hitherto done well. They all give Thanks to our Merciful Redeemer for leading them into it. They would every one of them rather undergo it again, and many

times over, than suffer the Small Pox as People ordinarily suffer it in the common way of Infection. The Story of one Dying after it, is trump'd up with so much folly and falshood, that it is unworthy to have any Answer given to it. In fine; Experience has declared, that there never was a more unfailing Remedy employed among the Children of Men.

That this is an Allowable Method, is plain; Because there can be no Objection brought against it, but what will also lie against the use of almost all the preventing Physick, that is used in the World. The Objector must maintain, That it is unlawful for a Man who would preserve his Life and Health, to make himself Sick in a way that constantly tends to Preservation. But a very Familiar Case will so illustrate the Matter, as to put it beyond all Dispute. Suppose, There is a Bloody Flux prevailing in the Town where I live, which proves Mortal to a great part of them that have it; many more than Four Hundred perish by it in a Month. A Physician is Master of a Purge; which whosoever takes it, is in an ordinary way, delivered from the danger of that Mortal Distemper. An Artificial Purge seasonably taken saves him from Death by the Natural Purge, which he is exposed unto. Will any scruple the taking of this Artificial Purge? Surely, None but such as want a Purge of Hellebore! Here the Man makes Himself Sick, while He is well: and thinks that he is not the whole who has no need of a Physician, while he has the Humours in him which render him obnoxious to a Deadly Sickness. He won't think it his Duty to stay till God send the Sickness in another way upon him; when it will be too late for him to seek relief; But he will give Thanks to GOD for teaching him, how to make himself Sick, in a way that will save his Life. He most properly takes GOD's Time to fall Sick: He does it seasonably, and in the Time when GOD has commanded him to do it.

Many Good People, who are sensible how weak their own Judgements are, will for a Case of Conscience be much assisted by the Judgement of the most able Divines in the Country. Now every Body knows how they concur in their approbation of this Practice.

The Design and the Spirit, (evidently of no good Original) with which the fierce opposition to this Practice is carried on will also go a great way towards determining of Good People in Favor of it. The Conclusion will

Several REASONS

Proving that Inoculating or Transplanting the *Small Pox*, is a Lawful Practice, and that it has been Blessed by GOD for the Saving of many a Life.

By Increase Mather, D. D.

Exod. XX. 12. *Thou shalt not kill.*

Gal. I. 10. *Do I seek to please Men? if I please Men, I should not be a Servant of CHRIST.*

It has been Questioned, Whether *Inoculating* the *Small Pox* be a Lawful Practice. I incline to the Affirmative, for these Reasons.

I **B**Ecause I have read, that in *Smyrna*, *Constantinople* and other Places, Thousands of Lives have been saved by Inoculation, and not one of Thousands has miscarried by it. This is related by Wise & Learned Men who would not have imposed on the World a false Narrative. Which also has been published by the *Royal Society*; therefore a great Regard is due to it.

II. WE hear that several *Physicians* have Recommended the Practice hereof to His Majesty, as a Means to preserve the Lives of his Subjects, and that His Wife and Excellent Majesty King GEORGE, as also his Royal Highness the Prince have approved hereof, and that it is now coming into practice in the Nation. In one of the Publick Prints are these Words, "*Inoculating the Small Pox is a safe and universally Useful Experiment.*" Several Worthy Persons lately arrived from *England* inform us, that it is a successful Practice there: If Wise & Learned Men in *England*, declare their Approbation of this Practice, for us to declare our Disapprobation will not be for our Honour.

III. GOD has graciously owned the Practice of *Inoculation*, among us in *England*, where some Scores, yea above an hundred have been *Inoculated*, & not one miscarried; but they Bless GOD, for His discovering this Experiment to them. It has been objected, that one that was *Inoculated*, died, viz. Mrs. D——: but she had the *Small Pox*, in the common way before, & her Friends and nearest Relations declare that she received no hurt by *Inoculation*, but was by a fright put into Fits that cost her Dearth. It is then a wonderful Providence of GOD, that all that were *Inoculated* should have their Lives preserved; so that the Safety and Usefulness of this Experiment is confirmed to us by *Ocular Demonstration*: I confess I am afraid, that the Discouraging of this Practice, may cause many a Life to be lost, which for my own part, I should be loth to have any hand in, because of the Sixth Commandment.

IV. IT cannot be denied but that some Wise and Judicious Persons among us, approve of *Inoculation*, both *Majesties* and *Ministers*; Among Ministers I am One, who have been a poor Preacher of the Gospel in *Boston* above Threecore Years, and am the most Aged, Weak and unworthy Minister now

in *New-England*. My Sentiments, and my Son's also, about this Matter are well known. Also we hear that the Reverend and Learned Mr. S. M. N. Sturford of *Northampton* concurs with us; so doth the Reverend Mr. W. of *Ipswich*, and many other younger Divines, not only in *Boston*, but in the Country, joy with their Fathers. Furthermore, I have made some Enquiry, Whether there are many Persons of a Prophane Life and Conversation, that do Approve and Defend *Inoculation*, and I have been answered, that they know but of very few such. This is to me a weighty Consideration. But on the other hand, tho' there are some Worthy Persons, that are not clear about it; nevertheless, it cannot be denied, but that the known Children of the Wicked one, are generally fierce Enemies to *Inoculation*. It is a grave saying of Old *Sennacherib*, *Belshazzar* *Turba est*. For my part I should be ashamed to joy with such Persons; O my Soul come not thou into their Secret, unto their Assembly be not thou United. I am far from reflecting upon all that are against *Inoculation*, I know there are very worthy Persons (with whom I desire to Live and Die) that are not clear in their Judgments for it, and they are greatly to be commended and honoured in that they will not act against a doubting Conscience; yet it may be some of them might change their minds, if they would advise with those who are best able to afford them Scripture Light in this as well as in other Cases of Conscience.

Novemb. 20. 1721.

That the Cause may have Two Witnesses, here are subjoined the Sentiments of another, well known in our Churches, of which I declare my hearty Approbation.

Sentiments on the Small Pox Inoculated.

A most Successful, and Allowable Method of preventing Death, and many other grievous Miseries, by the *Small Pox*, is not only Lawful but a Duty, to be used by those who apprehend their Lives immediately endangered by the terrible Disemper.

But the Method of managing and governing the *Small Pox* in the way of *Inoculation*, is a most successful and allowable Method of preventing Death, and many other grievous Miseries by this dreadful Disemper. Therefore, 'tis not only Lawful, but also

be Victorious; That when People have their Lives endangered by the Small Pox hovering about them, they not only may use the Method of Inoculation, to save their Lives, but they even ought to do it, if they can. They keep not in good Terms with the Sixth Commandment, if they do it not.

INFERENCES

I. Hence the Physicians may do well to beware, of going too far, and of taking wrong steps, for the frightening of People from this Practice, lest they Unawares have more to answer for than Men of their Profession should be willing to.

II. Hence, the Parents, and Masters, and Husbands and Wives, whose Relatives have beg'd as for their Lives, that they might have leave to save their Lives, by this Method, should not by their obstinate Violence hinder them from it, least on the Loss of their Lives they have sad matter of Reflection left unto them.

III. Hence, a People will do well, not to be too hasty in Resolves, that should forbid their Neighbours, to do what God has made their Duty for the Preservation of their Lives in this Method; lest they do in Effect forbid

Obedience to the Sixth Commandment. Especially, when the Bugbear of the Pestilential Consequences, is a Falshood, that has not the least shadow of Reason for it, and has the Experience of all the Countries under Heaven, where they use the Inoculation, to confute it. Nor has it ever been known of Later Ages, that the Plague ever began any where but in the East-Indies, from whence it has always been brought unto the Western World. And when the King, and Prince, and most Eminent Physicians in London and Dublin, and elsewhere, have declared their Approbation of it; it seems not much for our Honour, to declare that we disapprove it.

IV. Hence to Rave, and Rail with such bitter Execrations, as are too commonly used, against the Ministers, and other serious Christians, who favour this Practice, is a very crying Iniquity; and to call it a Work of the Devil, and a going to the Devil, is a shocking Blasphemy; and much more likely to bring the Plague among us, than the Practice, which they so ignorantly and maliciously do charge with such Imaginary Consequences.

FINIS.

BOSTON: Printed by S. Kneeland for J. Edwards, at his Shop in King-Street. 1721.

NOTE

This tract by Mather is one of a number of publications by him at about the same time on the same subject. He seems to have learned of the process from his colored slave, Onesimus, and five years before, in 1716, he determined to lay the matter before physicians. The story of Onesimus, he asserts, was corroborated to him by Africans who had come to this country.

There was quite as much discussion

about vaccination in the Colonies of 1721 as there is in the country today, and the anti-vaccinationists did not scruple to ridicule the credulity of the old minister. Any who are interested in this controversy will find it admirably set forth in "Some Lost Works of Cotton Mather," by George Lyman Kittredge, Proceedings of the Massachusetts Historical Society, Vol. XLV. R.

* Verso of IM, several Names, Destroyed.

(2)

a Duty to make use of it. None but very foolish, and very wicked People will deny the Proposition in this Argument. The Assumption is all that is disputed. But now, That this is a most Successful Method we have all the Evidence that Humane Reason can ask for. Men of Honour, and Learning, and Incomparable Veracity, not one or two, but a considerable Number of them, agree in the Relation they give us, of it's being used with constant Success in the Levant. It has been used upon vast Multitudes, even many Thousands, and for some Scores of Years: And when regularly used, it yet appears not, that ever one Person mis-arrived of it, or had the Small Pox after it. We have sufficient Proofs that it is a growing Practice in these Countries. If it had been unsuccessful, or been attended with bad Consequences, it must needs have been put out of Countenance, and have ceased long ago. Such Testimonies on the other side, as our People have been frighted withal, are not worth a Straw. No Man of sense that considers them can lay weight upon them: Ask us not, why we say so!

And we have an Army of Africans among our selves, who have themselves been under it, and given us all the Assurance, which a Rational Mind can desire, that it has long been used with the like Success in Africa. Yes, behold, ye yourselves have seen it. The Operation has been performed on an Hundred & more, in the Town of Bolton: And not one of them has mis-arrived: They have every one of them hitherto done well. They all give Thanks to our Merciful Redeemer for leading them into it. They would every one of them rather undergo it again, and weary him a over, than suffer the Small Pox at its primitive source in the common way of Infection. The Story of one dying after it, is trump'd up with so much folly and falsehood, that it is unworthy to have any Answer given to it. In fine, Experience has declared, that there never was a more infallible Remedy employ'd among the Children of Men.

That this is an Allowable Method, is plain; Because there can be no Objection brought against it, but what will also lie against the use of almost all the preventing Physick, that is used in the World. The Objecter must maintain, That it is unlawful for a Man, who would preserve his Life and Health, to make himself Sick in a way that constantly tends to Preservation. But a very Familiar Case will so illustrate the Matter, as to put it beyond all Dispute. Suppose, There is a Bloody Flux prevailing in the Town where I live, which proves Mortal to a great part of them that have it; many more than Four Hundred perish by it in a Month. A Physician is Master of a Purge; which whosoever takes it, is in an ordinary way, delivered from the danger of this Mortal Distemper. An Artificial Purge seasonably taken saves him from Death by the Natural Purge, which he is expos'd unto. Will any scruple the taking of this Artificial Purge? Surely, None but such as want a Purge of Hellstone! Here the Man makes himself Sick, while he is well: and thinks that he is not the whole who has no need of a Physician, while he has the Humours in him which render him obnoxious to a Deadly Sickness. He won't think it

his Duty to stay till God send the Sickness in another way upon him; when it will be too late for him to seek relief; But he will give Thanks to GOD for teaching him, how to make himself Sick, in a way that will save his Life. He most properly takes GOD's Time to fall Sick: He does it seasonably, and in the Time when GOD has commanded him to do it.

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The Design and the Spirit, (evidently of no good Original) with which the fierce opposition to this Practice is carried on will also go a great way towards determining of Good People in Favour of it. The Conclusion will be Victorious; That when People have their Lives endangered by the Small Pox, heaving about them, they not only may use the Method of Inoculation, to save their Lives, but they even ought to do it, if they can. They keep not in good Terms with the Sixth Commandment, if they do it not.

INFERENCES.

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III. Hence, a People will do well, not to be too busy in Resolves, that should forbid their Neighbours, to do what God has made their Duty for the Preservation of their Lives in this Method; lest they do in Effect forbid Obedience to the Sixth Commandment. Especially, when the Bugbear of the Pestilential Consequences, is a Falshood, that has not the least shadow of Reason for it, and has the Experience of all the Countries under Heaven, where they use the Inoculation, to confute it. Nor has it ever been known of Later Ages, that the Plague ever began any where but in the East-Indies, from whence it has always been brought unto the Western World. And when the Kings, and Prince, and most Eminent Physicians in London and Dublin, and elsewhere, have declared their Approbation of it, it seems not much for our Honour, to declare that we disapprove it.

IV. Hence to Rave, and Rail with such bitter Exclamations, as are too commonly used, against the Ministers, and other serious Christians, who favour this Practice, is a very crying Iniquity; and to call it a Work of the Devil, and a going to the Devil, is a shocking Blasphemy; and much more likely to bring the Plague among us, than the Practice, which they so ignorantly and maliciously do charge with such Imaginary Consequences.

F I N I S.

SYMPOSIUM ON SMALLPOX

VI. OUTBREAK OF SMALLPOX WITH OBSERVATIONS AND METHODS OF CONTROL

LONSDALE J. ROPER, M. D.,
Director of Public Welfare
Portsmouth, Va.
Lately Major M. C., U. S. A.

THERE was an outbreak of smallpox in the City of Portsmouth, Va., several months ago which demanded from the Health Department quick action and close attention. From January 14 until June 1, there occurred 75 cases, about three-quarters of the whole among the colored people. Just at the time of the appearance of the disease the city was unfortunate in not having any place in which to care for cases of this nature. Up to the beginning of the war an isolation hospital had been maintained by the City of Norfolk on Craney Island, which was conveniently located near this city and available for Portsmouth cases. This arrangement was terminated, however, soon after the beginning of the war, the Island being taken by the Government for military purposes. Hence, when smallpox made its appearance in Portsmouth there was no disposition of the patients other than local quarantine in their homes. Such a disposition was most unsatisfactory to the Health Department but, owing to certain state regulations regarding the location of institutions caring for this disease, more satisfactory arrangements could not be made.

All cases that occurred were closely watched and every possible precaution was taken to localize the disease. Accurate case histories were taken by nurses, and health inspectors visited regularly all patients in quarantine. All food that was consumed by the patients as well as other members of the family, who might have been caught in the house at the time of carding, was furnished by the city through the Health Department. Each

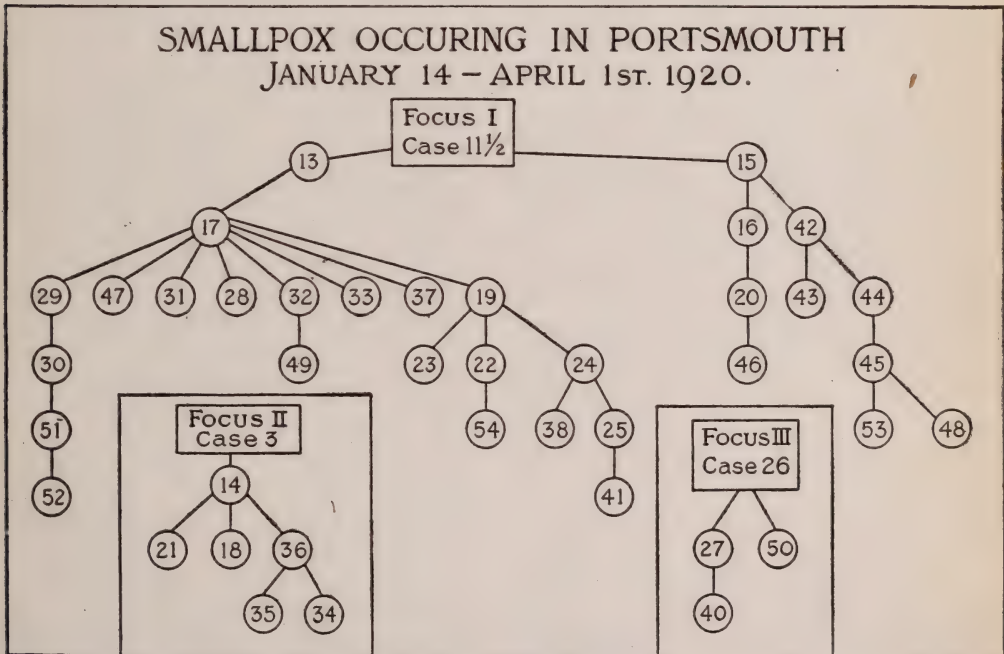
house in which there was a case of smallpox was visited almost daily. By this method close and accurate watch was maintained over each individual case. As each new case occurred, the health officer confirmed the diagnosis and this patient was immediately visited by a nurse who made subsequent visits every second or third day or more often if the condition of the patient was unsatisfactory. It was her duty to ascertain all facts pertaining to the case to be filed in the office. Practically in every instance the definite contact was established. Much credit is due the ingenuity of the nurses for their perseverance and persistence in establishing the sources of contact. As is well known to all people who deal with the negro race, they are especially non-committal, it being a very hard task to secure any information from them concerning another member of their race. This at first seemed to thwart the efforts of the nurses and inspectors in ascertaining the source of contagion, and it was only by the most diplomatic methods, which were fortified by the knowledge of the cases that had been reported, that an accurate contact chart was made. In conclusion thereof, each case was successfully traced and its relation with the source of infection ascertained.

That smallpox is gradually becoming more mild is apparently true, but from some of the mildest cases there have developed some cases of the most severe type. The efficiency of vaccination has been amply proven in numerous instances. That successful vaccination is a positive preventive measure is borne

out by this epidemic. That only one victim of smallpox showed an evidence of a previous successful "take" is conclusive to the mind of the writer that smallpox vaccination, when successfully performed, renders a perfect immunity. In this one case it is doubtful as to whether the scar presented was that of a previous vaccination or from some minor injury, but the patient insisted that he had been successfully vaccinated and further that he had smallpox some 15 years ago. This was the only case that gave a history of a previous attack. Males seemed to be more susceptible than females, with 60%

seen. These few cases were of the confluent type and the "pitting" that resulted therefrom was most characteristic.

Previous unsuccessful vaccinations have been interpreted by laymen and also by some physicians to mean a natural immunity present in some individuals such as to render them incapable of contracting smallpox. This belief has not been substantiated as evidenced by the fact that 32% or one-third of the total number of cases that occurred gave positive and definite histories of previous unsuccessful vaccinations. Some of the cases had been unsuccessfully vaccinated



of the cases, while from 19 to 40 years seemed to be the age group in which the disease was most frequently seen, 76% of the whole being in this group. Only 7% were under 19 and 17% over 40. The popular impression that smallpox is not as severe as it was in bygone days was substantiated in a measure in this epidemic, but there were eight or nine cases as severe as the writer had ever

as many as four times. It is evidently true that those who have had a successful "take" or who have a natural immunity are the only ones who have positive protection. The mere fact of being vaccinated and not having a positive reaction does not signify immunity. Of the whole 67% had never been vaccinated. Complete vaccination was carried on in infected areas and all school

children who did not have a successful scar were revaccinated. House to house compulsory vaccination was effected with very good results. When a new case arose the vaccination squad immediately covered the adjacent area.

The Health Department met with no opposition in its vaccination crusade. The public was strongly in favor of this procedure. Publicity was given as to the number of cases being reported and as to the value of vaccination. The greatest difficulty experienced during the epidemic was in locating new cases. The colored population easily recognized the disease when it occurred in a family, but there were a number of undetected cases that gave rise to new series. As a rule, the negroes do not have physicians attend them until they are dangerously ill, hence, very few cases were reported by physicians. Our means of detection was by house to house vaccination, the squad having been instructed to be constantly on the alert for new cases. Another method of discovering neglected cases was the coöperation given by insurance agents, rent collectors and tradesmen. A large number of cases were discovered in this manner. The Police Department also was keenly alert and reported a number of suspects. Certain blocks in the town were subjected to a house-to-house inspection. Colored preachers were communicated with and requested to ask the coöperation of their congregations as well as to advise immediate vaccination. In every instance these preachers complied with the request made. Notifications of the health officer by anonymous letters, telephone calls, etc., upon investigation almost invariably proved to be of smallpox. Every possible means was exerted to locate unreported cases. With all these various agencies at work, practically every case was located, but sometimes not before several relatives or visitors

had contracted the disease. The period of incubation seems to have been from 14 to 21 days, scarcely ever less than 14. The premonitory symptoms which usually ran a typical course of chill, backache and severe headache with slight febrile disturbances, generally consumed a period of from three to six or seven days, most often four days. The eruption usually lasted from eight to ten days in mild cases and from two to three weeks in severe cases. From the time of exposure a period of from two to three weeks usually elapsed before the characteristic rash appeared.

The course of a complete case usually ran from 25 to 30 days. There is one notable fact in connection with the epidemic and that is that not a single case died. In all justice to those families who were in quarantine for the period of the epidemic there were only two known instances of breaking the regulations.

In conclusion it is far from ideal to contend with a disease like smallpox in epidemic proportions without hospital facilities, but under the circumstances it is thought that Portsmouth was extremely fortunate in not having a great many more cases. The writer in the past 14 years has seen a large number of cases of smallpox but has never had an opportunity to observe with the same degree of accuracy the marked advantages of vaccination. The efficiency of such prevention is not questionable, but is a determined fact and any person who contracts smallpox who has not tried to immunize himself by this method should not be made the charge of any county, city or state.

A chart of 43 cases is presented which shows the contacts established from three foci. A list of these contacts will serve to make known under what conditions the infection was communicated. Most of the cases were among negroes, but those in group No. II were all whites.

FOCUS I

Case No.		No.
11½		
13	Boarded with.....	11½
17	Visited	13
29	Visited	17
47	Visited	17
31	Lived at.....	17
28	Visited	17
32	Visited	17
33	Visited	17
37	Servant from.....	17
19	Indirect	17
49	Wife of.....	32
23	Worked with.....	19
22	Indirect	19
24	Indirect	19
54	Wife of.....	22
38	Lived with.....	24
25	Visited	24
41	Mother of.....	25
15	Indirect	11½
42	Visited	15
43	Lived with.....	42
44	Lived with.....	42
45	Lived with.....	42
48	Lived with.....	42
53	Visited	45

16	Indirect	15
20	Son of.....	16
46	Indirect	15

FOCUS II

Case No. 3

14	Received groceries from	14
18	Husband of.....	14
21	Same house.....	14
36	Visited	14
45	Visited	36
34	Visited by.....	36

FOCUS III

Case No. 26

50	Brother of.....	26
27	Visited	26
40	Lived with.....	27

Since the preparation of this article and its accompanying statement of contacts and chart, 40 additional cases of smallpox were found. All of these were subject to the same supervision and investigation as those here noted and all were traced to their original foci. The city was free from the disease in September, and till the close of the year 1920 only one other case, an imported one, was reported.

**Syphilis and the Periodic Examination.—**

There is a growing and fortunate tendency to appreciate the value of the periodic physical examination. This entails the keeping of detailed and accurate records. Regarding the technique of the examination, it should comprise history, actual physical examination, urinalysis, blood count, and examination of stained smear and the Wassermann. These constitute the irreducible minimum.

The disease which is unrecognized in countless cases, and which is the cause of many obscure symptoms which show no response to the ordinary routine treatment, is latent syphilis. There is only one means

of recognizing this condition and that is the Wassermann reaction. It should be a matter of strict routine because on that can many of the latent cases be discovered. One great obstacle to the use of the routine Wassermann is the prejudice against syphilis. In the eyes of most of the laity and of many doctors, syphilis is not a disease, but a visitation of disgrace and punishment. Unconsciously it is identified with sexual guilt. The article concludes with a case history exemplifying the unnecessary bad health and inefficiency which result from a neglect to apply the routine Wassermann.—Arthur F. Kraetzer, *Med. Times*, XLVIII—10, Oct., 1920. (A. N. T.)

SYMPOSIUM ON SMALLPOX

VII. RESULTS OF VACCINATION IN THE PHILIPPINES

VICTOR G. HEISER, M. D.,
International Health Board,
New York City

THE value of vaccination as an effectual safeguard against smallpox, and the comparative harmlessness of this preventive measure, have perhaps never been more completely demonstrated than by the experience in the Philippine Islands, where for many years smallpox claimed 40,000 more deaths annually. Upon the systematic vaccination of all the inhabitants, province by province, the disease disappeared in the wake of the vaccinators. For instance, after the vaccination of the inhabitants of the six provinces in the vicinity of Manila, which had an annual mortality of 6,000 from smallpox, the deaths from this disease were reduced to insignificant numbers. In Manila, with a population of over 250,000 not one death from smallpox occurred in a period of seven years. It is of special interest to note that between 1915 and 1919, when the vaccination of newborn children and new arrivals in Manila was not effectually carried out, the disease promptly reappeared, and in the summer of 1918 over 700 deaths from smallpox were reported in Manila alone.

More than ten million vaccinations were performed between 1905 and 1915

without the loss of life or limb. This simply demonstrates that vaccination in itself is practically unattended with any risk, whenever the operation is performed with a vaccine that has been made under properly controlled conditions and the rules of asepsis are observed in its application.

The instinct to save life and prevent illness and suffering is practically universal. Notwithstanding the feeling against vaccination, I cannot help but believe that if those who are opposed to it could have more detailed knowledge of the wonderful results that have followed its intelligent application there would be very little opposition. In the past, vaccination may have been responsible for severe infection and, in occasional instances, the loss of life or limb. But if these few untoward instances are compared with those of the many thousands of persons who owe their lives to vaccination, it is quite apparent that the gain is on the right side of the ledger. Even if the extravagant claims of bad effects following vaccination were true, the damage done is very small compared with the loss of life and health and the disfigurement that occur among those who are unprotected against the disease.



Fetal and New-Born Mortality.—Of 127 cases of new-born mortality, 27.44% were caused by syphilis. This agrees with J. Whitridge Williams' results which showed 26.4% of his fatalities out of 70% were attributable to that disease. Holt, using the records of Sloan Maternity Hospital, found only 6.6% out of 720 cases. However, the Sloan records show little use of the Wassermann and no mention of the placental

examinations. The reports of many investigators have shown that the Wassermann best detects syphilis. Early and intense treatment of these positive women offer the best results for both mother and child, and if conscientiously carried out, should succeed in lowering the number of new-born victims of congenital syphilis.—L. J. J. Commiskey, M. D., F. A. C. S., *Long Island Med. Jour.*, XIV—10, Oct., 1920. (A. N. T.)

COMMON-SENSE VERSUS CUSTOM IN THE APPOINTMENT OF HEALTH OFFICIALS

HERBERT B. LARNER, S.B.
Health Officer, Montclair, N. J.

Once on a time only a minister was deemed fit to be president of a college; more recently only a doctor has been thought competent to be a health officer. Both situations have changed. The college selects the business man of broad vision, while the fitness of the trained engineer for health officer is fast becoming evident.

THE necessity of making appointments to offices in public health work an intelligent consideration of the qualifications needed for such positions, is one which has never been of such paramount importance as is the case at the present time. Occasionally, appointments are so flagrantly political as to be disgusting, but it all too frequently happens that owing to the scarcity of properly trained men, municipalities are forced to accept whatever material is offered them regardless of qualifications. Such a condition of affairs leads to a consideration of the training which is essential to the successful management of a modern health department.

For many years custom has decreed that public health work should be supervised by men who were graduates in medicine, and until comparatively recent years, it was quite natural that this should be so since the curative rather than the preventive aspects of medicine were foremost in the public mind. The duties of health officials not so very long ago were comparatively simple, and except in the larger cities their positions were frequently on a part-time basis with little or no remuneration.

With the development of sanitary science, however, a new era was ushered in. The practicing physician could no longer cope with the public health problems which arose and the services of

men with special training became necessary. Such problems as sewage disposal, water purification, malaria eradication and a host of others could wholly, or in part, be successfully dealt with only by the sanitary engineer. Problems in research required the services of bacteriologists and chemists and the building of factories made necessary studies requiring a knowledge of industrial processes, ventilation, dust removal, lighting and numerous other factors relating to industrial diseases. The control of milk and other food products called for the application of a knowledge of subjects not included in the curricula of medical schools, and so the list might be continued to considerable length.

The contrast between modern health department work and that of a few decades ago is very great. Today, in addition to a good working knowledge of the subjects already mentioned, the health officer must possess executive ability of a high order. He must be able to study intelligently the needs of his community and possess an intimate knowledge of the relative values of the numerous phases of health work if he is to expend his oftentimes inadequate appropriation in a manner that will yield the greatest amount of benefit. He must be able to differentiate between sound public health practice and popular fads which attract attention but which do little real good

and tax his financial resources disproportionately to their value.

The knowledge which has been outlined as essential to a successful administration is not to be obtained in a course at a medical college. A medical degree is without doubt an advantage, but so would be a degree in sanitary engineering, since many of the problems which arise relate to the engineering side of health work. It is a fact that most health officials are graduates in medicine, but this has been in the past due to a popular demand based on ignorance of what public health work in its entirety really involves. The times are changing very rapidly, and the public as a result of education, is beginning to take a broader view of the whole situation. As a result there is a growing demand for men who have had thorough courses in public health, and even now, in certain sections of the country at least, a medical degree is no longer the outstanding qualification necessary for appointment to important offices. Many communities which a few years ago would have regarded with indifference the proposal to spend a few thousand dollars for health work, have awakened to the vital need of such work and are in search of men qualified to map out and execute public health programs. The supply of such men is, of course, greatly exceeded by the demand and the problem of meeting the deficiency is a serious one. What will be the ultimate solution of it?

To recruit the necessary health executives from the ranks of medical school graduates is at best only a doubtful possibility. We are told, and the statement is backed with statistics, that of recent years the number of men graduating from medical schools has not kept pace with the increasing population of the country. This is explained by the high cost of a medical education, the required period of internship without compensation and the prospect of lean years during which the young physician is building

up a practice. Certainly, the matter is not pleasant to contemplate, and if the medical student has a career in public health in view after graduation, the expense of at least one year more of study is added to an already heavy burden. The young man contemplating a career along public health lines is quite likely to choose another profession if he feels that his chances of success are dependent upon the acquisition of a medical degree. All of this brings up a question concerning the value of a medical education to the executive health officer when compared with the cost of such training.

In a small rural community where the health officer is frequently called upon to confirm a diagnosis of a case of communicable disease, a medical training is unquestionably indispensable. But in the larger communities having health departments with greater organization and a more sharply defined division of labor, the man with a broad general knowledge of the science of preventive medicine and good executive ability, though lacking a medical degree, is quite capable of administering public health effectively. It is only a matter of time when this fact will be generally recognized and admitted.

In the meantime, however, efforts must be made to relieve the shortage of competent health executives that exists at present. The initial step in this problem should be through legislation. Laws at present in force in many states, specifying that health officers shall be medical graduates, should be amended to give non-medical men who are graduates of recognized schools of public health, opportunities to qualify for positions. Appointments should be made by competitive examinations which should be sufficiently broad in scope to cover the entire field and include all phases of the science. When such laws are in effect there will be an incentive sufficiently great to attract the best type of

men to the profession. More schools of public health will then be required and will be established in connection with other college courses and relief from the present shortage of qualified men will be in sight.

Until such changes are made executive

offices in public health work will continue to be filled by political appointment rather than by merit, but it is believed that the day is not far distant when common sense methods of appointment will replace the antiquated custom at present quite generally in vogue.



SANITATION IN VENEZUELA AND COLOMBIA

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Venezuela and Colombia are so different in many ways that they cannot be grouped together for discussion. For instance, in Venezuela military commanders rule, and every man of public distinction bears the title General, while in Colombia education is held more important and every man in public life is called Doctor, signifying, sometimes incorrectly, notable learning. But in sanitation the present development is about the same in the two republics—that is, scarcely above the primitive. In the rural districts, particularly, cleanliness in living gets little consideration, while in the towns, where the native talent for picturesqueness is so plainly marked, the demand for public hygiene is slight compared to that in most of our North American communities.

Many circumstances account for the primitive stage of sanitation. The heritage of the people, the climate in which they live, the methods of government, lack of education, extreme poverty among all the people except a small upper class, which has in general little concern for the condition of the poor, may all be cited. The climate itself, of course, greatly aids the existence and spread of contagious diseases and renders the fight against them more difficult. On the other hand it seems that the ex-

treme brightness and warmth of the sun must help to keep down disease, by its bactericidal power, and by the process of rapid drying of everything which its rays can reach.

LACK OF VITAL STATISTICS

In both of these countries the index of the condition of public sanitation, Vital Statistics, has scarcely been realized, the author was informed. From

PLATE I



Typical Street in Poorer Section of Town. The water spigot in Plate II is under the tree at the right edge.

casual observation it is evident that the people are sick a great deal from many unidentified ailments, as well as from well known diseases, such as malaria, hook-worm and typhoid fever. It also seems evident that the death rate is high.

It is said that the population of Venezuela has not increased during the past hundred years. Accurate information, however, as to the incidence of disease and death, and their causes, is not available, except by private investigation.

Because of the loose social organization, particularly in rural districts, the establishment of a modern system for vital statistics will be difficult, but it is plainly one of the primary needs for the development of public sanitation.

WATER SUPPLIES

The problem of water supply varies widely in the different sections of Venezuela and Colombia. In general, public water supplies are demanded only in the few centers of population, and most of the larger towns have municipal supplies, usually drawn from streams. A few of the dry lowland coast towns have a combination public and private supply dependent upon the direct use of rainfall collected in cisterns. From the public health standpoint this latter method is probably preferable to the ordinary distribution of stream-water through the towns. One customary scheme is to bring the water of the stream through the main street, or principal streets, in an open gutter in the center of the cobble pavement, where it flows through the length or breadth of the community. Each householder takes his water from this ditch in a pail or pan, uses it for his household purposes, and empties the dirty or waste water back into the ditch, so that by the time the water reaches the lower end of the town it is carrying much of the kitchen and household wastes and sewage. This is only one degree more primitive than the American plan of emptying the sewage into a stream so that it pollutes the water supply of a neighboring community, although it does not pollute the next door neighbor's water. Where sewers are provided, which is only in a few towns, the condition is somewhat better, and then probably little raw sewage gets into the

public water supply ditch. In either case, the effect on the public health must be severe. In some towns the ancient and picturesque water-carrier is in evidence, driving before him a sturdy burro, on whose back is strapped bags of water. It is hard to imagine that this water is fit to drink, but it is probably safer than the ditch or piped surface water, though not as good as straight home-cistern water. The towns situated in the mountains or near the foothills can sometimes secure a fairly safe mountain stream, and these towns will undoubtedly soon provide themselves with supplies distributed in pipe systems. The difficulties are greater for some of the towns situated in the coast regions and on the plains where surface water is not always available. Wells seem to be rare, but they are, or probably will be, the best solution for the water supplies of many communities in this latter class.

Except in the densely populated town areas, the water supply problem seems to be viewed in about the same light as by the Indians in the jungles. In one instance a rich and well known plantation takes its water for household use and for drinking from an irrigation ditch which receives the surface drainage from several corrals, from chicken yards and hog pens, and into which, above the point where the water is taken, are thrown most of the kitchen and household slops. The water is carried in a dirty pail and "filtered" through a large earthen jar, which removes most of the visible dirt, but which cannot produce water safe for drinking. This water is used by the owner of the plantation and his household. The workmen and their families use the same water, or water from a similar source, unfiltered. There seem to be poorer prospects for good water supplies in the rural regions than in the towns, and since the bulk of the population is still agricultural, the rural water supply problem is even more vital than that of the cities.

SEWERAGE

Only a few of the larger cities have sewers, and in these few, only the houses of the small, wealthier class are connected with them. The outdoor closet or privy is uncommon. Almost universally, a small fenced-in open space back of the house is used for an outdoor closet, and the material deposited on the ground in these open spaces is sun-dried and carried on the wind, washed away by the rains, or consumed by the fowls and pigs. As a matter of fact, these enclosures are much less disagreeable to the American or European than the badly kept dry closets or water-carriage closets in the hotels of the country. Of course the danger to the public health from flies and other insects is great, particularly where all kitchens and houses are entirely open; and the connection between this system of sewage disposal and the hookworm disease is at once apparent. It seems likely that the demand for sewers will be

slight in the towns and altogether negligible in the smaller rural communities and on the farms, until a long campaign of education based on the collection of vital statistics, can demonstrate to the people the danger to their health and the health of their children caused by their present method of sewage disposal.

GARBAGE DISPOSAL

There seems to be no serious problem of garbage disposal. The little waste material which might be classified as garbage, is disposed of by feeding to the chickens, pigs, and goats, some of which are kept by nearly all classes, even in the larger towns. As suggested above, the liquid kitchen wastes are sometimes emptied into the open water supply ditch, where one is available.

INSECTS

In some places, particularly in the sea-coast towns, the flies are numerous beyond imagination. In these places it is

PLATE II



Public Water Spigot. Gasoline cans are the favorite pails for carrying away the water. This is a modern supply from a mountain source. The open-air town toilet is behind the stalk fence to the right.

difficult to see how anyone can avoid intestinal diseases, since it seems inevitable that the germs be carried broadcast by the flies. Fly-eradication is dependent upon popular education, and the individual desire for cleanliness, both of which seem somewhat remote. Yellow fever, the former scourge, has been practically eliminated largely by isolating and screening patients suffering from the disease. Malaria, however, cannot be controlled except through the eradication of the anopheles mosquito. So many cases of malaria are mild and so many are not recognized as malaria, that the isolation of all patients seems quite impossible. Great strides can be made, however, by the combined effect of isolation and even partial mosquito eradication. Probably comparatively few deaths can be attributed directly to malaria, but the general low health of the people and their susceptibility to other fatal diseases, are no doubt due in some measure to the wide prevalence of malaria in its various forms. In view of the fact that even in some of our more highly developed communities, mosquitoes are still very numerous, one can realize the difficulties in any program for eliminating mosquitoes in a land where they breed the year round, where breeding places abound, and where the individual has become so hardened to the discomfort caused by mosquitoes that they are not willing (nor are they able) to undertake any large project for getting rid of them.

The discomfort caused by many other insects, such as fleas, chiggers, garapatas, and many others, particularly in the rural districts, can scarcely be appreciated, except perhaps by the men who lived in the trenches in France. There can be no doubt that the relation is im-

mediate and direct between insects and many diseases, some of them probably unrecognized.

The hookworm is one of the major causes for debility and, indirectly, for a high death rate. This offers a field for effective work, such as that undertaken by the Rockefeller Foundation. The relation between hookworm, and the method of sewage disposal in outdoor enclosures, as outlined above, is evident.

FOOD

To the American the food in Venezuela and Colombia seems very bad. It is badly cooked and badly seasoned, but, much more important from the public health standpoint, the food and the methods of preparing it are dirty—and often-times decayed food is used. Fresh milk is not extensively used except in coffee and for making cheese and butter, because it is almost impossible to keep it. Wherever cows' milk is used for children's food, it is hard to believe that any child can survive. The dirtiness of the workmen and of the utensils used, the activity of the flies and insects, and the total lack of examination of the cows, combine, it would seem, to make all the milk dangerous.

The general impression made by the towns and rural living conditions in these Carribean republics is one of dirt, bad odors, and ill health. On the other hand, the people have ready imagination and great self-respect, and the countries possess wonderful natural resources. It seems reasonable to expect that, with increasing economic improvement and better distribution of wealth, and particularly with increasing education, the peoples of Colombia and Venezuela will set out to secure for themselves greater comfort, better health and longer lives.



The Symposium on Health Centers, including the papers that were read at the A. P. H. A. Meeting in San Francisco, will be published in the March issue of the JOURNAL.

DETECTION OF MANURAL POLLUTION IN MILK BY THE ANAEROBIC SPORE TEST

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Read before Laboratory Section, American Public Health Association, at San Francisco, Cal.,
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The anaerobic spore test for manurial pollution of milk has certain definite advantages. Total bacterial count is at best an indefinite warning, visible dirt gives no clue to manure in solution, while *B. coli* depends on temperature and may give false indications. The anaerobic spore test is simple and meets requirements.

THE milk problem may be approached from many angles, but from the consumer's point of view a milk supply should meet three essential requirements: (1) It must be safe. Certification or pasteurization will meet this requirement. (2) It should be reasonable in price. To this end the machinery of production and distribution must be kept as simple as possible. (3) It should be clean. Except for certified milk, cleanliness is still an unsolved problem. This paper concerns itself with the last of these three points, viz., obtaining a clean milk supply. Specifically, it considers the anaerobic spore test as a means for detecting manural pollution in all types of market milk.

HISTORY OF THE METHOD

In a former paper (Weinzirl and Veldee, *Am. Jour. Pub. Health*, 1915, V. 862), attention was called to the possibility of testing milk for manural pollution by detecting the presence of anaerobes. However, the test was named the "*B. sporogenes* test" following the English usage for a similar method. It is quite certain now that several species of anaerobic bacteria are present in cow manure (Weinzirl and Klopfer, unpublished data), hence a more accurate designation of the method is "the anaerobic spore test."

Since the earlier report was published,

considerable progress has been made. The results will be given presently.

NECESSITY OF MAKING THE TEST

Apparently the belief is quite general that pollution of milk has reached the vanishing point. That this view is utterly false is shown by our work in the state of Washington. The anaerobic spore test was employed by H. A. Felder and the writer in checking up the twenty producers supplying milk to one of the best dairies in Spokane, Wash. In all, 1088 samples were tested for manure, and more than 25% of them showed excessive pollution. Miss Effie Thompson, then city bacteriologist for Yakima, Wash., examined 105 samples of milk and found 24.1% polluted. Of these samples, 57 were pasteurized milks. One dairy furnishing pasteurized milk showed 44.4% of the samples excessively polluted, while the other dairy selling pasteurized milk showed no pollution. In Seattle (Weinzirl and Veldee, loc. cit.), 98 samples of unpasteurized milk gave 25% polluted, 110 samples of pasteurized milk gave 20% polluted, and 37 samples of certified milk showed no pollution. Obviously manural pollution is far from reaching the vanishing point, and, doubtless Washington does not stand alone in this respect.

Granting, then, that a test for manural pollution is necessary, the question arises

—what method shall be employed? A number of methods are used for this purpose, but it is becoming evident that all of them have serious defects and that they fail at critical points. (1) The total count of bacteria fails because the number present may be due largely to multiplication, or to other factors than manure. (2) The *B. coli* test fails, since this organism may multiply in milk, or it may be killed by pasteurization. (3) The visible dirt test also fails, because it merely indicates the dirt which the dairyman's strainer has allowed to slip through. In case a centrifugal cleaner has been employed, this test will show a perfectly clean milk regardless of the amount of manure it originally contained or the soluble manure retained.

The anaerobic spore test eliminates largely, if not wholly, the defects found in the other methods. The anaerobic spores do not multiply under the conditions for keeping milk, they are not killed by pasteurization, and they cannot be filtered out by any cleaning device.

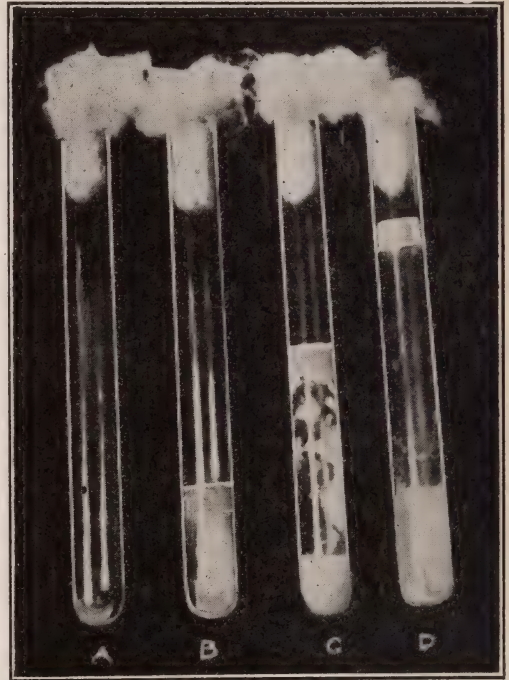
DESCRIPTION OF AN ANAEROBIC SPORE TEST

The test for anaerobic spores is easily performed. One-half to one cc. of melted paraffine is placed in a 15 mm. test tube which is plugged with cotton and sterilized either by dry or moist heat. By means of a sterile pipette, 5 cc. of the milk under test is placed in each of five tubes containing paraffine. The tubes containing the milk and paraffine are then placed in the Arnold sterilizer and heated to 80° C. for 10 to 15 minutes. This treatment melts the paraffine, which rises to the surface, where it hardens on cooling and forms the anaerobic seal. The heat also expels oxygen absorbed by the milk, thus rendering anaerobiosis more complete. All the vegetative bacteria present in the milk are killed by the heat, only the spore forms remaining. The tubes are then incubated for three days at 37° C. If anaerobes are present, gas will be formed, which lifts the paraffine plug in the tube (See Fig. 1.) Two positives out of five tubes con-

demns the milk as showing excessive pollution.

FIGURE I

Illustrating the Anaerobic Spore Test for Manural Pollution in Milk.



- A. Sterile tube containing paraffine.
- B. Paraffine on top of the 5cc. of milk.
- C. Paraffine raised by gas formed.
- D. Paraffine raised nearly to top of tube.

DETERMINATION OF SIZE OF SAMPLE OF MILK

In our earlier work three tubes were used, containing 5, 10 and 15 cc. respectively. Experiments were made by L. R. Thompson and the writer, in which manure was added to sterilized milk. The amount of manure varied from 10 to 200 milligrams per pint of milk. In all, 45 trials were made. These trials showed that 5 cc. samples would generally detect manure when present to the extent of 50 mg. per pint.

Having determined the degree of pol-

lution which could be detected, A. Skibness and the writer then analyzed 18 samples of cow manure by adding the same to sterilized milk to the extent of 50 mg. per pint. Samples of 1, 5 and 10 cc. of the polluted milk were tested as before. This work showed that the 1 cc. samples were usually negative, and that the 10 cc. samples gave little added information. This gives us, then, the 5 cc. sample.

There still remains the question—how sensitive is the 5 cc. sample? To answer this question, the data obtained from the 18 samples of manure may be tabulated as follows:

TABLE I

Showing sensitiveness of anaërobic spore test when 5 cc. samples of milk are used, the milk being contaminated with 50 mg. of manure per pint.

Sample number of manure	Number of analyses made	Number of analyses positive	Number of analyses negative
1	3	3	0
2	3	2	1
3	3	1	2
4	3	3	0
5	3	2	1
6	3	3	0
7	3	2	1
8	3	1	2
9	3	1	2
10	3	1	2
11	3	1	2
12	3	2	1
13	4	4	0
14	4	3	1
15	4	4	0
16	4	4	0
17	4	4	0
18	4	4	0
Totals	60	45	15
%		75	25

The results tend to show that the test will reveal 75% positives. This result is probably too low, due to the caramelization of the lactose during autoclaving. When lactose was added (Nos. 13 to 18), the sensitiveness was 95.8%.

It should be added that the samples of manure were collected during the

autumn, winter and spring, from individual cows in four dairies, and that each sample was analyzed periodically from 3 to 34 days after collection. Apparently the 5 cc. sample is not too sensitive, for it may fail to detect 50 mg. of manure in a pint of milk, or 1 gram in 10 quarts. Surely this amount of manure would be considered excessive by most sanitarians. Still, the test when applied to market milk, will condemn 20-25% of the supply.

THE ANAEROBIC SPORE TEST COMPARED WITH OTHER TESTS

In our earlier work we were naturally curious to determine how the test checked with those commonly employed for detecting manure. Accordingly, Felder and the writer analyzed 570 samples of milk from individual producers as delivered to one of Spokane's dairies. Four methods were employed: (1) Visible dirt, according to the New York standard; (2) *B. coli* (i. e. colon group) present in 1/1000 cc. of milk; (3) The anaërobic spore test as previously defined; (4) Total count of bacteria per cc. The analyses were made during July, August and September, and the results are given in Table II.

It will be observed that in a general way the four tests parallel each other. Since the tests were run on fresh milks direct from the producers, the older tests are employed under the most favorable conditions. The fact that the anaërobic spore test parallels the others would seem to be a strong point in its favor.

However, it is desirable to analyze the data more closely. If we assume (and the assumption appears justified), that a positive test is correct, and a parallel negative result is an error, then these errors may be tabulated. The total count, however, does not lend itself to such analysis. When does a total count indicate manural pollution? Do 100,000 or 1,000,000 or 10,000,000 bacteria indicate manural pollution? No one can say, for the test furnished no direct evidence.

In fact, the total count has very little specific significance. Apparently, under the conditions of the test experiment, both methods are satis-

TABLE II

Giving results of 570 analyses of milk from 20 producers by four methods for determining manural pollution.

Visible Dirt			B. Coli in 0.001 cc				Anaërobic Spores				Total Count
Grade (N. Y.)	No. of Samples	Positives Pct.	Positive		Negative		Positive		Negative		Average per cc.
			No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	
1	66	11.6	0	0	66	11.6	2	0.3	64	11.2	7,000
2	291	51.0	47	8.3	244	42.8	74	13.0	217	38.1	48,000
3	178	31.2	84	14.7	94	16.5	62	10.9	116	20.3	80,000
4	22	3.9	20	3.5	2	0.3	17	3.0	5	0.9	138,000
5	13	2.3	13	2.3	0	0.0	12	2.1	1	0.2	300,000
		100.0	164	28.8	..	71.2	167	29.3	..	70.7	.....

TABLE III

Presenting the errors in percentages for each of the tests for pollution.

Visible Grade	Dirt Error %	B. Coli Error %	Anaërobic Spores Error %
1	0.3	0.3	0.0
2	13.0	4.7	0.0
3	14.7	0.0	3.8
4	0.0	0.4	0.9
5	0.0	0.0	0.2
Totals	28.0	5.4	4.9

The table shows quite plainly, what common sense should have told us, that the visible dirt test is a failure for detecting manural pollution. What the test really indicates is that some dairy-men are careless about straining their milk. It affords no real clue as to whether a milk is actually clean and free from soluble manure. Referring again to Table II, it is observed that the test found 35 cases of pollution when it should have discovered 195. Does such a test really merit serious consideration?

The *B. coli* and anaërobic spore tests remain to be analyzed. The former condemns 28.8% and the latter 29.3% of the samples. Actually, however, only 13.2% are condemned by both, thus leaving approximately a 15% error unaccounted for. Referring to the table of errors, the *B. coli* test failed in 5.4% of the samples, while the anaërobic spore test failed in 4.9%. This still leaves approximately a 5% error unanalyzed.

factory, but each is subject to at least a 5% error.

SUMMARY

This study seems to show that the anaërobic spore test is far superior either to the total count or the visible dirt tests as an indicator of manural pollution in milk, and apparently it equals the *B. coli* test for this purpose. This is true only when the tests are made with the advantages equal for all of them. The advantages are rarely equal, however; the total count is subject to many disturbing factors, and is quite useless for this purpose; the visible dirt is readily removed by clarification or even careful filtration, thus rendering this test well nigh useless; *B. coli* multiplies in milk unless the temperature is held down, hence it may falsely indicate pollution; or it is killed by pasteurization when it fails completely. Since the major portion of our milk supply is now pasteurized, the anaërobic spore test must be used if this product is to be checked for pollution.

Finally, the anaërobic spore test possesses the merit of simplicity, requires no special training for its mastery, and is applicable to all kinds of milks. There is no longer any valid excuse for our failing to test milk for pollution, and thereby meeting the third of our requirements—a clean milk supply.

BREAST FEEDING IN THE REDUCTION OF INFANT MORTALITY

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and

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Read before the Joint Meeting of Child Hygiene and Vital Statistics Sections, American Public Health Association, at San Francisco Cal., September 15, 1920.

These authors do not absolve their brother physicians from responsibility in the high infant mortality through bottle feeding and note that medical schools spend hours teaching artificial feeding against a casual attitude in discussing maternal nursing. The story is told of the Minneapolis demonstration which helped reduce infant mortality there from 81 to 65.

When one realizes that in many of our large cities 100 infants die during the first year of life for every thousand born, and that this perfectly unthinkable situation is accepted with equanimity by many sanitarians and laymen, one is forced to the unpleasant conclusion, that some very important element is lacking in the role that the physician plays, both as citizen and humanitarian. So many statistics have been compiled bearing on the question of infant mortality, that it is perfectly justifiable to present the conclusions, that can be drawn from them without including in these conclusions the figures upon which they are based. No one can attack on account of its extravagance the contention that the death rate among artificially fed infants is approximately six times as high as among the breast fed. Granting this, it is very difficult to comprehend the modern tendency for bottle feeding, and at times even more difficult to realize why so much opposition is encountered when an effort is made to correct so deplorable a situation. It may be appropriate to analyze a few of the reasons responsible for the large number of babies, that are not given the tremendous advantage as to health and resistance always allied with maternal nursing. As deplorable as it

may seem, the medical profession itself is probably more at fault in this connection than any other group, and among physicians in the highly specialized branches of obstetrics and pediatrics are found the worst offenders.

In education alone can be found the keynote whereby this situation can be corrected. In a consideration of this phase of the question, too much stress cannot be laid upon the importance of properly handling the problem in the medical school. The hours and hours that are given over to the teaching of artificial feeding, which even by the most intensive methods can never be successful unless they are followed by a tremendous amount of experience, stand out in striking contrast to the casual attitude, which is so frequently taken in discussing with students the advantages of maternal nursing. Men are graduated from our best universities who have never even seen a mother nurse her baby, and as far as having a knowledge of some of the difficulties of maternal nursing is concerned, they are one very potent cause of the so frequently unassailable position of the proverbial grandmother.

Several years ago in an effort to determine the percentage of mothers that

were nursing their infants, a questionnaire was sent out by one of us (J. P. Sedgwick) to a large number of medical men in various parts of the country. For practical purposes, there was not one in this entire group who had not striven to procure for his own children the advantage of breast feeding. About 80% of these mothers had succeeded in nursing an infant three months or longer. Nothing can be more striking evidence of the general attitude of the medical profession towards the subject of maternal nursing than these figures.

Granting the contention, which one would hardly dare to question in view of the data at our disposal, that the infant mortality is about six times as great among artificially fed infants during the first year of life as among the breast fed, how can the knowledge be made available to the laity, and its importance so emphasized that artificial feeding may be reduced to an extreme minimum.

During the past two years the problem has been attacked in Minneapolis in an effort to determine what could be accomplished in a large community, if all available agencies were utilized to get coöperation in every home. There was formed for this purpose what was called the Breast Feeding Investigation Bureau of the Department of Pediatrics of the University of Minnesota. When one realizes the enormous number of ramifications that must be considered in outlining a piece of work of this kind, it is easy to understand why absolute support of the entire medical profession is essential. Every physician in the city was written to, and was invited to visit the University, where the purpose of the Bureau was carefully explained. When it was not possible to communicate with the doctors in this way, representatives were sent to explain to them the details of the problem. Special emphasis was laid upon the fact that no physician engaged in private practice would be employed in connection with the work.

A card index of the physicians was maintained, on which any special desire of the doctor was recorded. If he wished his patients to be seen by the representatives of the Bureau, they were sent, or if he preferred to carry out the directions of the Bureau through his own office, the problem was attacked in this manner. After several months, a representative was again sent to all the physicians, asking whether the work of the Bureau was embarrassing them in any way, and urging suggestions which would under all circumstances prevent such embarrassment. The Municipal Health Department coöperated in every way, and the Infant Welfare Society gathered information wherever it was available. The support of the press was essential and was most heartily given. The expense for the year's study was about \$7,000 which was appropriated partly by the Graduate School of the University, partly by the "War Chest" and the balance was subscribed by individuals. The routine method followed by the Breast Feeding Investigation Bureau may for convenience be divided into three parts.

First. Reports were received daily from the Municipal Health Department giving the names and addresses of all newborn infants with the name of the attending physician or midwife. These data were immediately entered on cards for filing and reference.

Second. Every mother was visited usually within the first three weeks by a social service worker, at which time the so called "First Information" was obtained. This consisted of a brief history of the other children in the family, how long each one had been breast fed, and if the breast was discontinued before the ninth month, when and why. The same history was elicited concerning the newborn infant. This was entered upon a filing card, and if any difficulty in nursing was apparent, the Bureau immediately communicated with

the attending physician. With his permission the patient was visited promptly by a nurse and an effort made to correct existing conditions. At this visit the mother was informed that she would receive cards from the Bureau at regular intervals during the first nine months of her baby's life, stress being laid upon the importance of properly and promptly returning these cards.

Third. When the baby was six weeks of age and every month thereafter for nine months, there was mailed to the mother a card upon which was the following series of questions:

1. Is your baby still breast fed?
2. How often do you feed it?
3. Does it receive the breast only?
4. Are you having any difficulty nursing the baby?
5. If so, what?
6. If it is not breast fed, when and why did you stop? State how long the baby was breast fed.

A second call was made by the visiting nurse when the baby was two months of age. It was at this period that the most difficulty was encountered and that most mothers were inclined to be discouraged, so that tact and logic were frequently necessary to prevent weaning.

Only by intimate contact with a problem of this type can its difficulties be appreciated. In the first place one has the natural opposition of the medical profession that an effort is being made to undermine the position held in the family, that by subterfuge or otherwise sooner or later some hint will be dropped whereby the prestige enjoyed will be destroyed and the patient lost. When the physician considers further the great inability on the part of nurses to realize that there may be several excellent methods of solving a medical dilemma, and that their original teaching is not infallible, it can be more readily understood why he is so often skeptical.

Added to this is the large number of men who are poorly trained and who realizing their lack of knowledge are adverse to any agency entering the home, that may be in a position to realize their shortcomings. The public itself always assumes a questionable attitude toward a movement of this type. As odd as it may seem there is something about the so-called sanctity of the home, violation of which is always suspected by the laity if some new public health measure is suggested. Add to this suggestion a provision that affects the attitude of the mother toward her child, irrespective of how altruistic the motive may be, and there rises up in the hearts of many people an immediate objection, that can only be overcome by a tremendous amount of educational propaganda. This necessitates absolutely on the part of the nurses, who are carrying on the work, a degree of tact and diplomacy that is very difficult to find even in people who are specially trained for this type of problem. One trait in these individuals is indispensable. They must have a human interest that insures thorough loyalty at all times. Nothing can be less interesting day after day, week after week, than visiting mothers and trying to impress upon them the tremendous value of the problem. It is a strange fact but true, that human nature is adverse to taking expert advice at any time, and if this is given without a recompense, which, after all, is the only method the average layman has of measuring its value, there is always a great disposition to reject it and accept the proffered suggestions of a hundred absurdly ignorant neighbors.

It is interesting to note in the first place the class of women that have interested themselves in the work, and in the second place to analyze the tremendous enthusiasm that they have developed. One could quote from numerous communications showing the per-

severance and devotion that were necessary to accomplish results, and at the same time formulate an idea of the spirit and determination behind the efforts of these workers. As difficult as a problem of this sort is to start, and as many as the obstacles are that must be overcome in the beginning, just so contagious is the change in attitude which is subsequently developed when the results can be seen. Physician and layman alike are willing to cooperate when they realize how many lives can be saved, but in a type of work that requires months and even years for a tangible effect to be visible, there is always a corresponding delay in developing a proper enthusiasm.

The definite purpose of the Breast Feeding Investigation Bureau was to reach the mother of every newborn baby in Minneapolis, and after the confidence of the mother was secured, to educate her first in the value of breast feeding and, second, in the means whereby it could be continued. These methods were very simple. They consisted almost entirely in making continuous demands at regular intervals on the breasts, and in impressing upon the mothers the importance of properly emptying the breasts, particularly in cases where the babies were not vigorous enough to nurse properly on account of prematurity or some asthenic condition. This phase of the problem cannot be too strongly stressed. The failure to use the mammary gland regularly and completely is unquestionably the most common and most potent cause for its failure to function. It is not within the scope of this paper to enter into all the details of the technique and difficulties of breast feeding, but they play a most important part in insuring its success and should be carefully studied and understood by anyone entering the field of preventive medicine.

As uninteresting as figures are, they are the only means at our disposal for

studying this very fascinating problem. Analyzing the results of the investigation of the breast feeding of babies born in Minneapolis during the months of January, February, March, April and May, 1919, the following statistics are available.

1472 (72%) of the 2022 babies still under observation at the end of the ninth month were on the breast—leaving 27% of those babies on artificial food.

1631 (77%) of the 2113 babies still under observation at the end of the eighth month were on the breast—leaving 22% of those babies on artificial food.

1810 (80%) of the 2240 babies still under observation at the end of the seventh month were on the breast—leaving 19% of those babies on artificial food.

1992 (84%) of the 2355 babies still under observation at the end of the sixth month were on the breast—leaving 15% of those babies on artificial food.

2090 (86%) of the 2412 babies still under observation at the end of the fifth month were on the breast—leaving 13% of those babies on artificial food.

2250 (89%) of the 2505 babies still under observation at the end of the fourth month were on the breast—leaving 10% of those babies on artificial food.

2490 (93%) of the 2674 babies still under observation at the end of the third month were on the breast—leaving 6% of those babies on artificial food.

2761 (96%) of the 2847 babies still under observation at the end of the second month were on the breast—leaving 3% of those babies on artificial food.

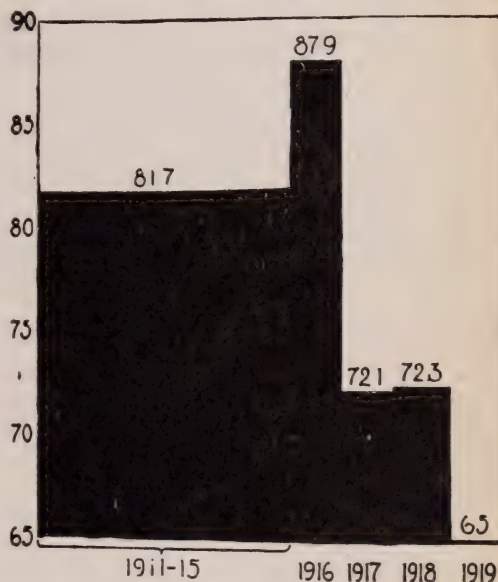
Naturally one must look for some tangible result from such startling figures, and that can very readily be found if the mortality rate of infants during the first year is studied. From 1911-1915 the infant mortality rate in Minneapolis was 81.7, in 1916, 87.9; in 1917,

72.1; in 1918, 72.3, and in 1919, the first year in which an intensive breast feeding campaign was carried out, the rate was reduced to 65. It is not necessary further to comment upon these facts. In a city with marked extremes of climate, the infant mortality has been reduced to a figure, which in view of what is found in most of our large cities, seems almost unbelievable. This work has now left the experimental stage and has been placed under the supervision of the Infant Welfare Society of Minneapolis, so that it may become a permanent institution.

When one considers the advances that have been made in public health work during the past two decades, it is, to say the least, strange that a more consistent effort has not been made to reduce the ravages among infants during the first year. Omitting the fairly large number of stillborn infants, no other cause plays so great a role as the diarrheal diseases, essentially due to artificial feeding. Granting that remarkable strides have been made in improving the character of the most common artificial food, cow's milk, one is struck by the fact that so little attention has been paid to the importance of so educating the public, that maternal nursing may be everywhere popularized and the empiricism of artificial feeding given proper condemnation. Public health agencies in the past have been inclined to delegate the responsibility of such problems to Infant Welfare Societies, and to neglect a duty which belongs definitely in

their domain. Were any of the communicable diseases to claim a toll at all comparable to that seen during the first year of life, every effort would be made by our health departments to combat the ravages of the individual disease, but in this all-important work they are satisfied to assume an attitude of silent complacency. It may seem extravagant, but

INFANT MORTALITY IN MINNEAPOLIS



well within the realm of reason to hope that in the future any measure tending to the reduction of infant mortality may not only be within the scope of Infant Welfare and Child Hygiene Societies, but a truly recognized function of the state.



Take Notice that the 1921 Meeting of the A. P. H. A. is set for November 14-18 in New York City. It will be a Great Occasion, the Fiftieth Annual Meeting, and Dr. Stephen Smith, the first President, promises to be there.

EDITORIAL SECTION

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THE MAN OF GOOD SENSE WILL NOT HESITATE

Before the introduction of vaccination, smallpox was one of the "children's diseases," and was as prevalent as measles is now. Each year hundreds of thousands died of smallpox, and of those who recovered, many were maimed or disfigured for life. Even at the present day, especially in the Orient, where vaccination is not generally practiced, smallpox still takes a toll of thousands of lives annually. In China, for example, smallpox is still a very common cause of the blindness so prevalent there.

Experience has again and again shown that smallpox resumes its former epidemic character whenever and wherever vaccination is habitually neglected, for through such neglect there results an accumulation of susceptible individuals who contract the disease and spread it through the community.

To every unprejudiced observer the evidence is overwhelming that there is only one effective procedure whereby to combat smallpox, and that is compulsory vaccination. No amount of public and individual sanitation has any appreciable effect in preventing the spread of this ancient scourge.

The anti-vaccinationist is a menace to the community, and no amount of camouflage on his part should prevent the people from recognizing him as such.

The dangers of vaccination are largely imaginary, and the benefits of the procedure are striking. The menace of smallpox is real and the effects of the scourge are terrible.

The man of good sense will not hesitate which to choose.

HUGH S. CUMMING.

SHALL IT BE I OR Y?

At the recent centennial celebration of the Medical College of the University of Cincinnati one of the principal addresses was made by Professor W. T. Sedgwick, who as our readers know has long been interested in public health science and public health education. Taking for his subject "Modern Medicine and

the Public Health" Professor Sedgwick reminded his audience that by a remarkable coincidence the hundredth anniversary of the University of Cincinnati Medical College was the fiftieth of the great Medical Reformation in the United States, begun as this was in 1870 by President Eliot of Harvard, whom the speaker characterized as the "Martin Luther" of this latter day movement.

After tracing briefly the development of modern medicine and modern medical education and criticising the present medical curriculum for its want of proper teaching of public health subjects, Dr. Sedgwick urged that this curriculum, which he compared in rigidity with the letter I, should be converted into the letter Y, the first two years remaining as now but the last two diverging from these as a base and leading, one arm to degree of M. D. and the other to the degree of D. P. H. He pointed out that by its recent action in establishing the degree of Doctor of Medical Sciences (D. M. S.) the Harvard Medical School has taken "a long step in the right direction," but he added, "The degree of Doctor of Medical Sciences will not, however, be either sought for or valued as would the degree of Doctor in Public Health by those engaging in Public Health practice. For them it will be much as it would be for those about to practice Medicine provided with the degree of D. M. S. instead of M. D."

Professor Sedgwick of course favors special schools of Public Health parallel with, but independent of, Medical Schools, but he apparently is not sanguine of any rapid multiplication of such schools, or of any output from them which for years to come will meet the urgent need for well trained Public Health officials. Accordingly he turns to the Medical Schools, in which no doubt there is always a certain percentage of young men who by the end of their second year of medical study would willingly turn toward Public Health if the way were open for a degree at the end of their course comparable with the degree of Doctor of Medicine, and particularly if they felt reasonably assured of careers of immediate and permanent importance and remuneration.

Doubtless the ideal arrangement is the establishment of special and separate Schools of Public Health closely affiliated with Medical Schools and Engineering Schools, but it is too much to hope that such schools may be established in sufficient abundance to meet the needs of the times. Meanwhile, it would seem entirely possible for Medical Schools to offer at a minimum cost Public Health instruction to such of their students as have already completed the basic first two years. Only a few additional instructors would be needed since a good deal of the necessary work, such for example as that in communicable diseases, might readily be shared with the third and fourth year medical students. The whole subject is important and urgent, and it is greatly to be hoped that American Medical Schools will, as Professor Sedgwick invites them to do, rise to the "golden opportunity" which he believes to be theirs.

R.

FOOD AND HEALTH

For the student and guardian of the public health, the center of gravity of the food problem has shifted from sanitation to nutrition. Broadly speaking the food supply has been made safe and there now remains the larger problem of making it so fully adequate as to ensure for all of our people the best possible condition of nutrition and through this the highest state of health and the greatest possible vigor and ability to resist disease.

Education of the public in the knowledge of food values and the principles of nutrition is not the function of the health officer alone but he should be prepared to do his part; and appreciating the importance of good nutrition, he will the more readily and effectively guide and support the teaching of food values and good food habits by public health nurses and other available agencies.

So long as the relations of food to health were conceived only or chiefly in terms of the possibly injurious effects of adulterated food, the matter was rightly regarded as of somewhat subordinate importance. The food adulterations found by the chemist were usually such as to do injury to the pocket-book rather than to the health of the consumer. And when the food chemist essayed to enter the field of nutrition he had, until quite recently, to face the embarrassing fact that rations made up of pure substances representing all the known constituents of food never sufficed for the permanent nourishment of experimental animals—and the purer the isolated proteins, fats, carbohydrates and salts entering into such a food mixture the more certainly and promptly would nutrition fail.

Chiefly as the result of the work of Hopkins in England and of Osborne, Mendel, McCollum and Hess in this country, we now know that an adequate natural food supply furnishes, and that normal nutrition requires in addition to the previously known organic and mineral foodstuffs, a group of substances until recently quite unknown and even yet not chemically identified, the so-called accessory factors, food hormones, or vitamins of which we now recognize three types often identified as Vitamin A, B, or C.

It is now known that the vitamins, like certain of the mineral elements, are very unevenly distributed among staple articles of food and that a food supply may be adequate to satisfy the appetite and the palate and yet furnish too little of one or more of the mineral elements and vitamins. A food supply thus unbalanced may lead directly to one of the so-called deficiency diseases or (probably more often) may pave the way for infectious disease by lowering the vigor and diminishing the ability of the individual to cope with infections.

The relation of the food supply to the public health thus appears, through this newer knowledge of nutrition, in a much more positive and commanding light. Recognizing this the American Public Health Association appointed in 1917 a Committee on Nutritional Problems, whose third annual report appears elsewhere in this issue as a part of the proceedings of the San Francisco meeting. This short report should be read in full as it is too concentrated to permit of adequate summary in an editorial.

The Committee recognizes the importance of the vitamins to health even under conditions in which no cases of deficiency diseases appear.

The richness of milk in the "A" vitamin, as also in calcium and in proteins well adapted to supplement those of the cereal grains, lends new force to the adage that "the dietary should be built around bread and milk." It suggests also a reëxamination of the respective merits of the beef animal and the dairy cow as transformers of food for man's use from the joint standpoint of food economics and of adequate nutrition and health. The report of the Committee on Nutritional Problems together with the findings which they quote from the Committee on Food and Nutrition of the National Research Council make it perfectly plain that from the points of view both of economics and of health there is good reason for a shifting of emphasis from meat to milk in the American food supply and in the individual dietary. No fear need be entertained as to the ability of production to keep pace with an increased demand for milk, because with present possibilities in the line of condensed and dried milks, it is evident that not only the milk of the present dairy areas can be brought into human consumption, but that milk can be produced wherever cattle can thrive, and can be sent to the consumer if not in the original fluid, then in condensed or dried form.

In the report of last year the Committee expressed its conviction that an increased production and consumption of milk offers the best single means for the suppression of pellagra in the South, and there is the best of evidence, both from the feeding of laboratory animals and in human experience, for the belief

that an increased consumption of milk in its various forms, even though accompanied by a decrease in the consumption of meat will redound to the decided benefit of the public health, through the betterment of individual vigor and ability to resist disease.

BOOKS AND REPORTS REVIEWED

The Community Health Problem. *Athel Campbell Burnham, M. D. New York: The Macmillan Company. Pp. 149. 1920. Price, \$1.60.*

Out of the pioneer work in general sanitation and the protection of public health during the last two or three decades have come two modern points of emphasis in current health work: One, the conception of disease control and health control is in large part an individual problem—a problem of personal hygiene; the other, a growing appreciation of the fundamental importance of the community unit as the most effective physical basis for constructive health activities. Incident to this latter conception, we have seen the wide development of community health programs, health centers, health stations, community unit experiments, in rural districts, small towns and sections of large cities.

In the light of the growth of community consciousness with respect to our obligations for disease control, this book of Dr. Burnham's on "The Community Health Problem" is timely. Dr. Burnham's small volume is designed for semi-popular reading and instruction, as well as for the orientation of lay and professional field workers. After discussing in a suggestive if not exhaustive manner general problems such as "Sickness As a Cause of Poverty," "The Private Physician and Community Health," etc., the author devotes several chapters to such specific problems as "The Public Health Nurse," "Industrial Medicine," "Health Centers," "Tuberculosis," "Social Hygiene," etc.

The reader will find "The Community Health Problem" distinctively "modern," both in social point of view and in its background of up-to-date information. Chap-

ters on "Endowed Health Demonstrations," "Health Insurance," "State Medicine," etc., present these subjects with a keen appreciation of the social and economic values involved, the discussion being appropriately illustrated by data from the most recent published reports of such current studies and activities as the Rockefeller Foundation health campaigns, the Red Cross peace-time health experience, the Framingham Community Health and Tuberculosis Demonstration, the Cincinnati Social Unit Experiment, etc.

The book also contains a reference list of recent health publications, and is reasonably well indexed. It may be recommended to those seeking a general, easily readable review of the modern health problem.

DONALD B. ARMSTRONG, M. D.



The Link Between the Practitioner and the Laboratory. *Cavendish Fletcher and Hugh McLean. New York: Paul B. Hoeber, 1920. Pp. 91. Price, \$1.50.*

This is an English publication dealing with technical matters wholly applicable to American practice. The authors, pathologists of wide experience, speak of it modestly as "a mere index." The medical man who values the aid which an efficient clinical laboratory can give him will be delighted to have this little volume in his desk within easy reach.

It is the arrangement of the material which makes it particularly practical. The initial chapter contains an alphabetical list of diseases, with directions for laboratory requirements. It states briefly what material is to be obtained, how and where to obtain it, and how to prepare it for shipment. It also gives the minimum time required before a report can be rendered.

In giving the directions, the physician

receives some valuable suggestions on the differential diagnosis of the suspected case. For instance, under "Abscesses" directions are given for the collection of the exudate as well as for the collection of urine, thus warning the physician of the probability of diabetes. The arrangement is particularly suited to the physician who wishes to obtain all the laboratory aid he can on any particular case and who needs to know how to go about it without having to consult various reference books. The rest of the booklet deals with directions for the col-

lection and shipment of blood, urine, tissues, throat cultures, milk and water samples.

ARTHUR LEDERER, M. D.



Beginning in January, 1921, what have been heretofore sanitation numbers of the Tropical Diseases Bulletin will be published as "Sanitation Supplements." These are obtainable from the Tropical Diseases Bureau, 23, Endsleigh Gardens, London, N. W. 1, England, at the rate of 7/6 per annum. This price covers three Sanitation Supplements which will form an independent volume of 150 to 200 pages with index.



CONVENTIONS, CONFERENCES, MEETINGS

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| February 1, New York City, New York Tuberculosis Association. | March 7-9, Chicago, Ill., Annual Congress on Medical Education and Licensure. |
| February 1-3, Toronto, Can., Engineering Institute of Canada. | March 7-9, Chicago, Ill., Federation of State Medical Boards of the United States. |
| February 2-3, Society headquarters, Toronto, Ont., Central Council of the Canadian Red Cross Society. | March 7-10, Chicago, Ill., Midwinter Conference of the American Medical Association. |
| February 9, Jacksonville, Fla., Florida Tuberculosis Association. | April 5, Nashville, Tenn., State Medical Association of Tennessee. |
| February 10, Colorado Springs, Colo., Colorado State Nurses' Association. | April 5, Hackensack, N. J., New Jersey State Nurses' Association. |
| February 14-16, Hotel Astor, New York City, National Civic Federation. | April 12, Clarksburg, W. Va., West Virginia Health Officers' Conference. |
| February 24-26, Atlantic City, N. J., American School Hygiene Association. | April 19-20, Columbia, S. C., South Carolina Medical Association. |
| February 25-26, Trenton, N. J., Annual Conference of State and Local Health Officials of New Jersey. | April 19-21, Montgomery, Ala., Medical Association of the State of Alabama. |
| February 28, Cheyenne, Wyo., Wyoming Public Health Association. | April 19-21, New Orleans, La., Louisiana State Medical Association. |
| February —, Portland, Ore., Oregon Tuberculosis Association. | April 25, Pinehurst, N. C., North Carolina State Health Officers' Association. |
| February —, Manila, P. I., Philippine Islands Medical Association. | April 28, Boston, Mass., Massachusetts Association of Boards of Health. |
| February —, Austin, Texas, Texas Public Health Association. | June 3-5, Boston, Mass., Conference of State and Provincial Health Authorities of North America. |
| March, 1st week, Concord, N. H., New Hampshire Health Officers' School of Instruction and Health Conference. | June 6-10, Boston, Mass., American Medical Association. |
| March 7-9, Chicago, Ill., Association of American Medical Colleges. | November 14-18, New York City, AMERICAN PUBLIC HEALTH ASSOCIATION. |

EMPLOYMENT BUREAU

HELP WANTED

Help wanted announcements will be carried free in this column until further notice. Copy goes to the printer on the 10th of each month for publication on the 20th. Mail to Boston office as early as possible.

In answering keyed advertisements, please mail replies separately to editorial office in Boston, Mass. In replying give age, professional training, salary requirements, previous positions held and three or more references.

Wanted: Full time medical assistant health officer to do medical examination of school children and direct public health education in Yellowstone county, Montana. Address Health Department, Billings, Montana.

Wanted: Laboratory technician trained in bacteriological examination of milk and water. Address Health Department, Billings, Montana.

Wanted: Trained dairy inspector. Address Health Department, Billings, Montana.

Wanted: Bacteriologist for city health department, must be an all-round laboratory man and have experience in dairy and milk work. Address City Health Officer, Charlotte, N. C.

Wanted: Assistant physician in hospital for communicable diseases. Good opportunity to become proficient in laryngeal intubation. Salary \$1,200, with maintenance. Under Civil Service. Apply to Commissioner of Health, Baltimore, Md.

Wanted: Laboratory technician for general routine work in State Health Laboratory. Address: Laboratory, State Board of Health, Louisville, Ky.

The Division of Health, St. Louis, Mo., is in need of an assistant bacteriologist, man or woman, salary \$2,400 per annum. Reference required. Apply to Health Commissioner, Room 3, Municipal Courts Bldg., giving experience.

Wanted: Medical graduate, qualified to take charge growing health department laboratory and dispensary work including V. D. Clinic. Salary \$2,400. State training and experience. Also nurse for Child Welfare work. Salary \$1,500. Address R. W. Garnett, M. D., Health Officer, Danville, Va.

Wanted: Director of bureau of chemistry and food in health department, preferably one with some experience in the executive work of such a bureau. Address No. 426, J. H. C., care of this Journal, Boston, address.

POSITIONS WANTED

Position wanted announcements will henceforth be carried in this column. The charge is \$2 per insertion. Copy should be received at this office by the 10th of the month.

Wanted: By a graduate in Public Health, position as Health and Sanitation Officer or a position as Chemist and Bacteriologist in a Public Health Laboratory. Seven years of experience in Public Health work. Address C, care of this Journal, Boston address.

Wanted: Appointment as assistant to Medical Officer of Health, or take charge of a department in a town not large enough for full time Medical Officer of Health. In such a position am capable of discharging the duties of epidemiologist, bacteriologist, statistician, sanitary inspector and secretary. Am at present discharging such duties and could give first class recommendations from present employers. Would prefer a Western appointment. Thoroughly alive to all up-to-date Public Health movements. Address replies to X. Y. Z., care of this Journal, Boston address.

Bacteriologist, eight years' experience in Public Health laboratory, wants position in state or city laboratory. Thoroughly experienced in general bacteriological methods, including the manufacture of vaccines and serums. Capable of administration. Minimum salary \$2,100 per year. Address M. R. M., care of this Journal, Boston address.

ASSOCIATION NEWS

A. P. H. A. PROGRAM REGULATIONS

The Central Committee on Programs, composed of all section program officers, has adopted the following program regulations:

1. All papers accepted must deal with new information or with new viewpoints. A "rehash" is not desirable. Those knowing of new work in public health are urged to inform the proper program officer.

2. Offers of papers can be considered only when accompanied by a 200-word abstract or by a manuscript.

3. To avoid undue duplication of speakers or subjects, all speakers are requested to notify all program officers involved in cases where papers are being offered to or invited by more than one section.

4. More than one paper per speaker shall be authorized only by a formal vote of the Central Committee on Programs.

5. Papers shall be limited to 15 minutes; that is, approximately 1,800 to 2,500 words. Laboratory papers are limited by constitution to 10 minutes. Discussions receive 5 minutes.

6. Papers shall not be listed for reading in the absence of the author.

7. Program committees will meet about March 11, 1921, and again in June to vote upon papers offered. Speakers will be notified **AFTER THESE MEETINGS** concerning committee decisions.

8. Exceptions to the foregoing rules shall be authorized only by a vote of the Central Committee on Programs, composed of all section program officers.

One finds two types of programs in scientific conventions. The one extreme is represented by a nicely oiled steam roller system, under which papers are accepted by invitation only, in accordance with a well-defined plan outlined in advance. If a program of this type is prepared by an efficient committee, it is likely to be pleasing to the audience. However, it is discouraging to initiative and fosters a reactionary spirit.

The other extreme type is the unplanned program, in which practically all papers are accepted that have been offered. This type leaves a happy group of budding authors, but usually a dissatisfied audience. There is sure to be overcrowding of programs, lack of time for discussion and a number of papers that do not add materially to the sum total of our knowledge.

The Central Committee on Programs in adopting regulations has tried to steer between the two extremes. It will endeavor to give every author a hearing who has a real message to deliver, and asks for the privilege. On the other hand, the committee will insist that the rights of the listeners be given due consideration.

The first of the rules printed herewith aims to avoid what is popularly known as "ancient history." Teachers, laboratory heads and others, knowing of important original work, are urged to send in suggestions.

The second rule requires a 200-word abstract of papers, in order to enable program officers to make their selections intelligently. Incidentally, it is hoped that this procedure will discourage the custom of writing papers on the train during the last hundred miles of the trip to the convention.

It frequently happens that excellent papers are offered which cannot be accepted because all of the available places on the program have already been assigned. Occasionally no time remains for discussion. There is always pressure for space on the programs of the Association, and this situation will be aggravated at the 1921 meeting. Rules three, four and five are designed with a view to conserving space on the program.

The decision not to list papers for read-

In order to promote programs of the highest merit for the semi-centennial of the Association, to be held in November, 1921, the program officers of the various sections met in Washington, D. C., on December 8, 1920, and adopted the regulations which are printed herewith.

ing *in absentia* will meet with the approval of all who have given the subject careful thought. At the California meetings it happened in more than one session that not one of the scheduled speakers appeared in person. If an audience of 50 or 100 or 1,000 persons come to hear a speaker, it is only fair that the speaker should be present to defend his paper and to answer questions. Again, when an excess of papers is offered, surely those speakers should receive preference who will be present in person. In those cases where an individual has a vital communication to present, and cannot be present in person, it is suggested that the communication be forwarded to the chairman of the section for presentation, if time is available after the listed papers have been read. In the case of joint authorship, only one of the authors need be present.

As action on programs will be taken by full committees, program chairmen will not be able to give immediate response to all authors of papers. The first committee action on papers will be taken about the middle of March, 1921, and invitations to present papers will be sent out thereafter. The Central Committee will again act in June, and it is probable that most of the programs will be practically completed about that time.

Following is a list* of program officers to whom correspondence should be addressed:

Laboratory: Maj. A. Parker Hitchens, Army Medical School, Washington, D. C.

Public Health Administration: Dr. H. F. Vaughan, City Board of Health, Detroit, Mich.

Vital Statistics: Dr. Henry B. Hemenway, Department of Public Health, Springfield, Ill.

Sociological: It is possible that these papers will be included in other sections.

Sanitary Engineering: Mr. Theodore

Horton, State Department of Health, Albany, N. Y.

Industrial Hygiene: Dr. W. A. Sawyer, 343 State street, Rochester, N. Y.

Food and Drugs: Mr. R. E. Doolittle, 1625 Transportation Building, Chicago, Ill.

General Sessions: Dr. M. P. Ravenel, University of Missouri, Columbia, Mo.

In conclusion, it is desired again to emphasize that while some of the foregoing regulations may seem stringent, they do not proceed from a spirit of indifference to the rights or feelings of the individual. Far from becoming a machine, the Association wishes to be as helpful as possible to every individual member, and suggestions will always be welcome and will receive the most careful consideration.



EXECUTIVE COMMITTEE MEETING

The executive committee of the association met in Washington December 9, 1920, and it was voted that the next annual meeting of the association be held in New York City. The date selected was the week of November 14, 1921, subject to revision by the President upon local representation.

The executive committee favored House Resolution 33, recommending a survey of Federal health activities, but felt it best to take no action on the Sheppard-Towner bill for state departments of maternity and infant welfare or the Fess-Capper bill for physical education.

It was voted to appoint a committee to coöperate with the National Education Association and similar bodies for working out standards for the teaching of hygiene in the schools.

The Secretary and Treasurer were authorized to organize a committee on finance to consider revenue-producing activities, recommend budgets and be otherwise active with regard to problems of finance of the association.

*These names are starred in the list which is published meeting on page III of the advertising section of the JOURNAL.

THIRD ANNUAL REPORT, COMMITTEE ON NUTRITIONAL PROBLEMS

Presented to Section on Food and Drugs, American Public Health Association, at San Francisco, Cal., September 16, 1920.

During the past year research upon nutritional problems has continued very active, especially in connection with the vitamins and the relations of these and other food constituents to the so-called deficiency diseases. A very important advance in the unification of our knowledge of the vitamins and its application to the problems of human nutrition and health in a sane and well-balanced manner, has been registered in the publication by His Majesty's Stationery Office of the Special Report of the Medical Research Committee of the (British) National Health Insurance Commission, entitled, Great Britain National Health Insurance Medical Joint Committee Research Committee, Special Report Series No: 38 "Report on the Present State of Knowledge concerning Accessory Food Factors (Vitamins)." Conservatively and with commendable scientific restraint (with the possible exception of too ready an acceptance of the theory that rickets is due to a lack of fat soluble vitamins) this British Committee of which Professor Hopkins is chairman, sets forth the more important bearings of the vitamin content of the food supply upon the public health in terms addressed directly to British readers, but which are almost equally applicable here. Without attempting to summarize this report, or to abstract the data which it presents, the following paragraphs may well be quoted:

"The practical importance of the facts will not be understood until it is recognized that a deficiency in food, which when complete or extreme leads to actual disease, may, when only relative, be responsible for ill health of a vague but still important kind" . . .

"It is of the greatest importance to emphasize the fact that a deficiency of an accessory factor may be of a much smaller order than that necessary to produce the typical syndrome of the disease usually associated with the deficiency, but may nevertheless be sufficient to induce a distinct failure of nutrition and health. This is particularly true in the case of young children. Fortunately in this country our national dietary is so varied even amongst the poor as practically to preclude an absolute deficiency of any particular factor arising, so that there is little fear of

the incidence of a typical deficiency disease, such as beriberi. On the other hand, there is a very real danger that the improperly balanced dietaries consumed in many cases may lead to a partial deficiency of one or more of the necessary substances, if not of other components as well. The influence of these partial deficiencies, even when relatively slight, may be extremely serious when they occur in early life, and, if we may judge from the experiments on animals, an adequate supply of these indispensable dietary components in later life may completely fail to make good the damage caused by the deficiencies in youth."

Speaking of partial deficiencies of vitamins in dietaries of adults:

"One point of practical importance concerned with the slow development of these deficiency diseases is the certainty that long before the symptoms of the acute disease can be diagnosed there will be a general, ill-defined departure from good health which may defy diagnosis, but which will seriously lower the well-being and efficiency of the individual. These considerations are especially important in cases where isolated cases of pronounced deficiency disease are diagnosed among large communities of people, as in institutions, camps, etc. So small an incidence of the disease may be regarded as unimportant, but in reality it is an indication that a widespread danger exists and that the health of a much larger number of persons is being affected by the same cause, although, owing to greater natural resistance or other causes, severe symptoms may not for the moment have supervened."

Both upon the exact causes and significance of the deficiency diseases and upon the nature and occurrence of the vitamins and their behavior under such treatments as are involved in industrial and household methods of preparing and preserving foods, investigations are now being pursued very actively and data about to become available should be taken into account in any attempt to formulate generalizations in advance of those offered by the British Committee Report above mentioned. If desired, your Committee will be glad to continue its study of this subject with

a view to submitting more definite statements regarding the deficiency diseases at a later meeting. Meantime your Committee would again call attention with emphasis to the fact already fully established that the average American food supply is one-sided through liberal if not excessive use of meats and sweets and insufficient appreciation and use of milk, fruits and vegetables as food; and would urge that the Association as a whole take cognizance of this fact and seek, through its Public Health Administration and Sociological Sections as well as the Section on Food and Drugs, to foster the larger use of milk, vegetables and fruit in the American dietary. We urge that this be made a prominent part of the educational work done by health officers everywhere, and that the departments of health of our states and cities, and this Association as a whole should emphasize the importance to the public health of providing adequate encouragement and facilities for the production and marketing of these perishable foods upon which well balanced nutrition and good health and efficiency are so largely dependent.

We recommend* that a small and active committee representing the Association as a whole, in touch with both administrative and nutritional problems, be appointed to study the question as to the best method of checking the tendency to relative decline in milk production which threatens such serious results to the health of the nation, to investigate the possible development of the use of dried milk and dried milk products as a means of conserving and marketing this most important food, and to consider whether milk supply should be treated as a public utility in the hope of thus reducing the retail price of milk and increasing its consumption, whether wholesale and retail markets should be provided more liberally at public expense in order to facilitate and economize the bringing of perishable foods to the consumer, and whether Congress should be urged to extend the market news service of the United States Department of Agriculture to the end that the fruit and vegetable crops of the whole country may be brought into the service of all its consumers with the greatest efficiency and the least possible waste.

We also recommend the printing in full in the Journal of the Association of the following

*The Section voted to refer this matter to the Committee on Nutritional problems.

statement regarding milk and meat in the food supply recently adopted unanimously by the Committee on Food and Nutrition of the National Research Council:

MEAT AND MILK IN THE FOOD SUPPLY
(Committee on Food and Nutrition of National Research Council, April 3, 1920)

"It has long been known, but perhaps never sufficiently emphasized, that the milch cow returns in the human food which she yields, a very much larger share of the protein and energy of the feed she consumes than does the beef animal. Doctor Armsby (Science, August 17, 1917) has estimated that of the energy of grain there is recovered for human consumption about 18 per cent in milk, and only about 3.5 per cent in beef.

"In the report on the food supply of the United Kingdom, it was estimated that to produce 100 calories of human food in the form of milk from a good cow, required feed equivalent to 2.9 pounds starch; 100 calories milk from a poor cow was estimated to require the consumption of 4.7 pounds; and 100 calories of beef from a steer 2½ years old, to require 9 pounds starch equivalent in feed.

"Stated in terms comparable with those of Dr. Armsby this would mean that the good milk cow returns 20 per cent of the energy value of what she consumes; the poor milk cow 12 per cent; the good beef steer 6 per cent. Although this estimate is more favorable to the beef steer than is that of Dr. Armsby, yet even here it will be seen that the poor cow is twice as efficient, and the good milk cow more than three times as efficient as the beef steer in the conservation of energy in the food supply.

"Considering the whole length of life of the animal, Wood estimates that the cow returns in milk, veal and beef, 1/12 as much food as she has consumed, while the beef steer returns only 1/64; in other words, the cow is five times as efficient as the beef steer when the whole life cycle of the animal is considered.

"Similarly it has been estimated by Cooper and Spillman (Farmers' Bulletin, U. S. Department of Agriculture) that the crops grown on a given area may be expected to yield from four to five times as much protein and energy for human consumption when fed to dairy cows as when used for beef production. As Wood has very strikingly shown, the longer beef animals are fattened on grain, the less economical the process becomes.

"Quite recently, Dr. Armsby has pointed out (*Yale Review*, January, 1920) that 'the dairy cow shows the highest efficiency of any domestic animal, both as regards conversion of food into milk and availability of the product for man.'

"Not only is the milk cow several times more efficient than the beef steer in the conservation of proteins, fats and carbohydrate for human consumption; in the gathering and preparation of mineral elements and vitamins she contrasts even more favorably with the beef animal. It is largely because of its richness in calcium and in fat soluble vitamins that milk is the most efficient nutritional supplement to bread or other grain products.

"Meat is strikingly poor in calcium and does relatively little to balance a diet consisting largely of bread or of other products of seeds. It does, of course, supplement the protein, but American dietaries would nearly always be adequate as regards protein even without the meat that they contain. On the other hand, dietaries containing little or no milk are very apt to be inadequate as regards calcium. Detailed analysis of the results of hundreds of American dietary studies shows that in practice the adequacy of the calcium intake depends more largely on the adequacy of milk supply than upon any other factor, or in fact upon all other factors combined.

"The vitamins furnished by hay and grains and thus consumed by cattle are stored in the animal's tissues to only a limited extent, but are transferred in relative abundance to the milk. Hence, the vitamins of the coarse material not directly available as human food, are brought into form for man's use very efficiently through milk production, and very inefficiently through the production of meat. Thus, the result of recent studies in nutrition which have made clearer the importance of the mineral elements and vitamins, is to emphasize strongly the great desirability of more

abundant milk supply, even if this should somewhat reduce the production and consumption of meat. Our present knowledge of nutrition justifies more fully than ever before the statement that "the dietary should be built around bread and milk," bread or other grain products being the foods which furnish the most nutriment for their cost (whether in money or in land and labor) and milk being by far the most efficient nutritional supplement to bread or other grain products.

"Somewhat more of our grain crops than at the present should come directly into human consumption to augment the bread supply, and of the grain fed to cattle more should be used for the production of milk, and less for the production of meat.

"In general, 10 pounds of grain may be expected to produce not over 1 pound of meat or about 3 quarts of milk. If the 3 quarts of milk cost the consumer more (because of greater labor cost to produce) they are also certainly worth more to him. In so far as things so different as meat and milk in their nutritional properties can be compared, it is fair to say that 1 quart of milk is at least as great an asset in the family dietary as is a pound of meat. The per capita consumption of meat in the United States is so high that it might be reduced by $\frac{1}{3}$ or even $\frac{1}{2}$ with little or no nutritional loss, while a corresponding increase in milk consumption would certainly constitute a great improvement in the average American dietary.

"We are confident that a moderate shifting of emphasis from meat to milk will help in the normal evolution of American agriculture and improve the food economy and public health of the American people."

(Signed)

H. C. SHERMAN, Chairman,
C.-E. A. WINSLOW,
E. L. FISH,
ISIDOR GREENWALD.



**Not too early to be thinking about the Fiftieth Annual Meeting
of the A. P. H. A. in New York City, November 14-18, 1921.**

LIST OF NEW MEMBERS

Proposed for Election to the

A. P. H. A.

December 10, 1920, to January 10, 1921, inclusive.

Names of Sponsors are set in **Bold Face Type**.

Names of New Members are in Light Face Type.

CALIFORNIA

- W. H. Kellogg, M. D., Berkeley.**
Rodney F. Atsatt, Inspector, California State Board of Health, Berkeley.
- P. F. Nichols, Berkeley.**
William V. Cruess, Asst. Prof. of Fruit Products, University of California, Berkeley.
- G. N. Whitton, Berkeley.**
Edna W. Bailey, Ph. D., Asst. Director, Children's Health Centers, Berkeley.
- R. L. Wilbur, LL. D., Stanford.**
Selah Chamberlain, Trustee Stanford University, Member Med. Comm., San Francisco.

CONNECTICUT

- Anna I. van Saun, New Haven.**
Mildred S. Hollinshead, New Haven.

ILLINOIS

- Sarah M. Hobson, M. D., Chicago.**
Emma G. Holloway, M. D., Director, Social Hygiene, W. C. T. U. of Ind., North Manchester, Ind.
- Wm. H. Welker, M. D., Chicago.**
Maximo M. de Ocampo, Laboratory Technician, Univ. of Ill., Chicago.
- C. St. Clair Drake, M. D., Springfield.**
Clayton S. Whitehead, M. D., Naperville.
- John Ritchie, Jr., Boston, Mass.**
Wilson & Co. Library, Atten. L. M. Tolman, M. D., Chicago.
- Robert Graham, D. V. M., Animal Pathology, Univ. of Ill., Champaign.**

INDIANA

- H. L. B. Coote, M. D., Michigan City.**
Helen M. Mulqueen, R. N., School Nurse, Michigan City.

IOWA

- Merle Wright, R. N., Fairchild.**
Agnes Swift, R. N., Public Health Nurse, Washington.

KANSAS

- Martin Dupray, Hutchinson.**
Elizabeth V. Condell, R. N., Supervisor Public School Health, Hutchinson.

KENTUCKY

- P. W. Covington, M. D., Louisville.**
Ralph J. Malott, M. D., County Health Officer, Harlan.
- A. W. Hedrich, Boston, Mass.**
Frederick H. Stover, Crescent Hill Filter, Louisville.

MAINE

- James W. Loughlin, M. D., Damariscotta.**
Mrs. H. E. Cotton, Damariscotta.

MARYLAND AND DISTRICT OF COLUMBIA

- R. A. Bolt, M. D., Baltimore.**
R. J. Ochsner, M. D., Chief, Bureau of Child Hygiene Div. of Health, Cleveland, Ohio.
- Roscoe C. Brown, M. D., Washington.**
Ralph E. Stewart, M. D., Lecturer, U. S. P. H. S., Washington.
- L. A. Hansen, Washington.**
Selma M. Dahl, R. N., Chicago, Ill.
- I. W. Mendelsohn, Washington.**
Ora C. Aylyffe, Supt. Water Purification Division, Fargo, N. Dak.
- Blanche E. Myers, Washington.**
Mrs. Jenny Velander, School Investigation Work, Skara, Sweden.
- Asst. Surg. General C. C. Pierce, Washington.**
Ida J. Brooks, M. D., Acting Asst. Surgeon, U. S. P. H. S., Little Rock, Ark.
- Harold B. Wood, M. D., Washington.**
Frederick B. Flinn, Chemical Engineer, U. S. P. H. S., South Orange, N. J.

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Caroline Simons, Bacteriologist, Boston.
- A. F. Allen, Campello.**
Arthur L. Dopmeyer, Asst. Sanitary Engineer, U. S. P. H. S., Cleveland, Ohio.
- Edmund C. Sullivan, Asst. Sanitary Engineer, U. S. P. H. S., Beaumont, Texas.**
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H. N. Sutherland, M. D., Health Officer, Ely.

MISSISSIPPI

- J. Ritchie, Jr., Boston, Mass.**
E. B. French, M. D., City Health Officer, Natchez.

MISSOURI

- J. W. Greene, M. D., Independence.**
William Wood Hobbs, M. D., Raytown.
- Neva Ritter, Kansas City.**
Margaret Scofield, Laboratory Technician, State Bd. of Health, Topeka, Kan.
- C. T. Ryland, M. D., Lexington.**
A. J. Chalkley, M. D., Lexington.
- Walter J. Hansen, M. D., St. Joseph.**
Charles H. Werner, M. D., St. Joseph.
- Dr. Borden S. Veeder, St. Louis.**
American Red Cross, St. Louis Chapter, Atten. Miss Blanche Renard, Act. Dir., St. Louis.

NEW JERSEY

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John T. McClure, Health Officer, Harrison.
- F. W. Green, Little Falls.**
John L. Radcliffe, Supt. Filtration, Elizabeth.

NEW YORK

- J. G. Wills, D. V. M., Albany.**
C. D. Pearce, M. D., Owego.
- O. H. Parker, M. D., Jamaica, L. I.**
Victor Mildenberg, M. D., Borough Chief, Dept. of Health, Brooklyn.
- George R. Bedinger, New York City.**
Bailey E. Burritt, Gen. Dir., N. Y. Assn. for Improving the Condition of the Poor, New York City.
- Maurice J. Lewi, M. D., New York City.**
Harry E. Dubin, Ph. D., Research Chemist, New York City.
- Dorothy Stabler, New York City.**
Grace R. Bolen, Director of Social Service, Sloane Hospital for Women, New York City.
- Frankwood E. Williams, M. D., New York City.**
Ralph P. Truitt, M. D., Asst. Prof. Neur. & Psych., Univ. of Ill., Chicago.
- Mary E. Carey, R. N., Yonkers.**
Romeo Roberto, M. D., Director of Communicable Diseases, Yonkers.
- A. W. Hedrich, Boston, Mass.**
Irene F. Riker, Public Health Nurse, Seneca Falls.

NORTH CAROLINA

- John F. Gordon, Henderson.**
Agnes R. Harris, R. N., Red Cross Public Health Nurse, Henderson.
- Edna Reinhardt, Winston-Salem.**
Ellie C. Nelson, Lincoln County Public Health Nurse, Lincolnton.

NORTH DAKOTA

- O. S. Craise, M. D., Towner.**
Erma Smith, Co. Supt. of Schools, Towner.

OHIO

- E. R. Hayhurst, M. D., Columbus.**
Col. James S. Wilson, M. C., U. S. A., Surgeon, Fort Benjamin Harrison, Ind.
- Mrs. Norma Selbert, R. N., Asst. Prof., Public Health & Nursing, Ohio State Univ., Columbus.**
- Robert S. Patterson, Columbus.**
Harry E. Rouifs, Field Sec., Ohio Public Health Assn., Columbus.
- J. Sheldon Scott, Steubenville.**
Fred B. Harrington, M. D., Weirton.

OREGON

- Grover C. Bellinger, M. D., Salem.**
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PENNSYLVANIA

- H. F. Smyth, Dr. P. H., Philadelphia.**
Edith Gordon, M. D., Wayne.
- Edith Hedges Matzka, M. D., Wayne.**

TEXAS

- H. S. Capps, M. D., Beaumont.**
Lewis O. Bernhagen, Director of Sanitation, Beaumont.

Robert J. Harding, San Antonio.

M. C. Erwin, City Sewer Engineer, San Antonio.

UTAH**John Ritchie, Jr., Boston, Mass.**

Joseph K. Nicholes, Health Worker, St. George.

VIRGINIA**Martha Oakes, Charlottesville.**

Clara L. Craine, R. N., Supt. Visiting Nurse Assn., Davenport, Iowa.

Mamie E. Rice, Farmville.

Robert K. Brock, Attorney-at-Law, Farmville.

WASHINGTON**F. A. Martin, Spokane.**

William J. Kennedy, Pres. Towards Creamery, Detroit, Mich.

WISCONSIN**Mrs. Justine S. Thorp, R. N., Beloit.**

Ellen F. Chapin, Pres. Visiting Nurse Assn., Beloit.

PHILIPPINE ISLANDS**M. V. Arguelles, M. D., Manila.**

J. S. Fernando, M. D., Medical Inspector, Philippine Health Service, Albany, N. Y.

CANADA**John W. S. McCullough, M. D., Toronto, Ont.**

Hugh W. Johnston, M. D., District Officer of Health, Sault Ste. Marie, Ontario.

Robert E. Mills, Toronto, Ont.

A. Grant Fleming, Deputy Medical Officer of Health, Toronto, Ont.

A. W. Hedrich, Boston, Mass.

Fraser S. Keith, Gen. Sec., Engineering Institute of Canada, Montreal.

Question Box

The Association has quietly maintained for the past few years a Health Information Bureau which has answered questions of the members and given them information desired, or directed them to some authority from whom the information could be secured. Two such questions have recently come to the Bureau, both of which are fundamental at the present moment. The JOURNAL invites its readers to advise out of their own knowledge and experience the young men who make the inquiries. Send replies to the Question Box, A. J. P. Health, 169 Massachusetts Avenue, Boston, 17, Mass.

1. For a year and a half I have been employed by a firm of sanitary engineers. I have done office work, and in the field have been resident engineer on constructions of considerable importance. At times my net pay has been slightly less than that of the unskilled laborer. Is there a future for my work or should I become a labor foreman or some kind of a business man instead?

2. I have completed about half the work in a public health course of a well-known school. Taking into consideration the reactionary and economical trend of legislative bodies today, does the field of public health offer me sufficient opportunity to warrant me or any other similarly qualified man in completing the course and entering public health work?



The Noonday Lunch

Who can imagine a more healthful procedure than that here presented, a meal in the open after a stiff forenoon's hike. This life gives the boys many advantages in the vacation time, a chance to become acquainted with nature, to learn the elements of care of themselves and the appreciation of fresh air. This group is from Camp Roosevelt, Muskegon, Mich., and these young fellows divide the time between military drill, exercises, swimming and aquatic sports with the improvement of the mind by no means forgotten.



PUBLIC HEALTH NOTES

Abstracts by D. GREENBERG, M. P. HORWOOD, JAMES A. TOBEY and HOMER N. CALVER.

Announcement is made by the Royal Sanitary Institute, London, of a Henry Saxon Snell Prize in the year 1921. The prize will consist of 50 guineas and medal of the Institute, and is offered for an essay on "Suggestions for a System of Central Hot Water Supply and Heating, adapted to Modern Housing Schemes, and to existing groups of Houses." The following points should be dealt with:

1. Central installation.
2. Appliances for and methods of distribution.
3. Methods of conserving the heat.
4. Provision for continued supply during repair of system.
5. Cost: initial and service.
6. Combination with other services for reducing expenses.

The funds for this award, which is made by the Institute at intervals of three years, are provided by a legacy left by the late Henry Saxon Snell. The general conditions for this competition include an essay of not more than 5,000 words, typewritten on foolscap, and illustrated by drawings or sketches. Two competitors may combine in sending one essay. Essays must be delivered on or before August 31, 1921, addressed to the Secretary of the Royal Sanitary Institute, 90 Buckingham Palace. They must be submitted without the name of the competitor, but with a motto legibly marked in the right hand lower angle of the first sheet, with the motto and an identification enclosed in a separate letter. The award committee reserves the right to withhold the award or to divide it between two essays deemed of equal merit. The prize essays will become the property of the Institute. The cost of postage must be paid by the competitor. Fuller particulars may be learned by addressing the Secretary at the address above given.



All-America Conference.—The All-America Conference on Venereal Diseases and Social Hygiene, which met in Washington December 6-11, 1920, was the first gun in a world war, the call to which was sounded by women before the International Health Con-

ference at Cannes, France, in April, 1919. The delegation there, who represented the five allies who fought the great war, called for regional conferences to take up the work; and of these, this meeting was the first.

The second will be held next May at Copenhagen, Denmark, and will be attended by representatives of all the Scandinavian nations, Holland and Great Britain. Later conferences will be held in 1921 at Paris and at London, and one or both of these will be attended by delegates from Germany, which before the war did much against the twin diseases.

The meeting here was attended by representatives of ten of the nations of the Western Hemisphere—Brazil, Canada, Cuba, Mexico, Panama, Honduras, Paraguay, Peru, Santo Domingo and the United States.

Dr. Wm. H. Welch, President of Johns Hopkins University School of Hygiene and Public Health, and President of the conference, pointed out at the first meeting that only within the last few years had knowledge of the twin diseases progressed far enough to make such a gathering possible. Today, however, medical knowledge is entirely sufficient to exterminate these diseases; and it is not necessary to fight blindfolded as has been necessary for centuries in the fight against yellow fever. The diseases, however, can not be checked without the united efforts of all classes of the community; and to obtain this support, the education of the public and the doing away with the ridiculous false shame that forbade their mention is essential.

At the Conference, all classes except ministers were represented, and much regret was expressed at the absence of these. A resolution was adopted urging that ministers should attend any similar conferences that might be held.

The work of the Conference was eminently practical. Split into sub-committees, it met each morning to discuss the smaller problems involved in the treatment of the one great problem. All suggestions were considered; the chaff was sifted out and what remained was formulated into work-

able resolutions, which were referred to the general body of the delegates at the evening sessions. The problems discussed were all big and vital; and the conclusions reached will go far to do away with many of the difficulties that have troubled the rank and file in the past.



Mortality for the Year 1919.—The Census Bureau's annual bulletin on mortality statistics for the death registration area in continental United States, which will be issued shortly, shows 1,096,436 deaths as having occurred in 1919. This represents a rate of 12.9 per 1,000 population, and is the lowest rate recorded in any year since the establishment of the registration area. The rate for 1919 is in striking contrast with the unusually high rate for 1918, due to the pandemic of influenza, which was 18 per 1,000. This is a drop of 5.1 per 1,000 population.

The death registration area in 1919 comprised 33 states, the District of Columbia and 18 registration cities in nonregistration states, with a total estimated population of 85,147,822, or 81.1 per cent of the estimated population of the United States. The states of Delaware, Florida and Mississippi were added to the area in 1919 and Nebraska in 1920, so that now the only states not in the area are Alabama, Arizona, Arkansas, Georgia, Idaho, Iowa, Nevada, New Mexico, North Dakota, Oklahoma, South Dakota, Texas, West Virginia and Wyoming. The Territory of Hawaii is part of the registration area, but the figures given in this summary relate only to the area in continental United States.



Important Factors in Campaign Against Tuberculosis.—At the recent conference of the International Union Against Tuberculosis held in Paris, Sir Robert Philip, representing the British National Association for the Prevention of Tuberculosis, said that the incidence of tuberculosis is determined by two factors, the presence of infection and the suitability of the soil. In an intelligent campaign against tuberculosis these two factors must receive equal recognition. To exaggerate the importance of one at the expense of the other was a disastrous error. The importance of infection is seen in striking relief, when the disease gains access to

a virgin soil. Many examples of this had been cited, and one of the most remarkable concerned the experience of the Senegalese troops in France during the last war. M. Borrel had shown that only 4 or 5 per cent of these troops coming direct from Senegal to the French camps at Frégus were recognized as tuberculous. Nevertheless, the mortality due to tuberculosis amongst these troops after they had been in France for five months rose rapidly from 48 in 1916 to 312 in 1917, 557 in 1918, and to 298 in 1919. Post-mortem examinations showed a special type of disease among these troops, a type which resembled the acute tuberculous infection of childhood. In the older centers of civilization that type of disease was not found in adult life. The accumulated evidence showed that in the older countries almost every member of the community was infected, and that resistance to the development of the malady was largely determined by environment. As long as infection was omnipresent, and social conditions were unphysiological, the risk of developing the disease, after exposure to infection, would remain very great. These two factors should determine the future attitude of the nations of the world in the campaign against tuberculosis.—*Lancet*, Nov. 6, 1920. D. G.



Recreation for Adults and Children.—Every citizen—man, woman and child—should have ample and ready facilities for both outdoor and indoor recreation, and, from the point of view of mental health and happiness, everyone from childhood upwards should have a hobby. The person without a hobby, especially if working in a monotonous employment, is to be pitied, for the range of hobbies, indoor and outdoor, is infinite.

The necessity of recreation for women and girls equally with men and boys should be emphasized, for in the nature of things women and girls are more liable to periods of mental and physical depression; therefore, there is all the more need for them "to get out of themselves," so to speak, on all reasonable occasions.

The form of physical exercise in which a person should engage is partly dependent upon age. One can lay down no rule in that respect. As has been said: "A man is as old as his arteries," and if anyone has any doubt about his fitness for heavier

games he should never hesitate to consult an experienced qualified medical practitioner upon the subject. For both sexes of young people some form of dancing is probably the best of all indoor exercises, for it adds grace and lightness to the exercises of the gymnasium and the playing field, especially such forms as morris dancing, folk dancing, and classical dancing.

Our physical exercises should not be directed to training for mere military reasons, or to create gymnasts or acrobats, but rather to fit children and grown-ups alike for their duties as citizens—for military, industrial, or domestic duties as the case may be. To quote Sir George Newman: "Such physical training will render healthy children stronger and will give those who are delicate or under-developed, the opportunities they ought to have of reducing or removing their disabilities."—E. M. Smith, *Medical Officer*, Nov. 6, 1920. *D. G.*



Welfare Work at Army Stations.—Much labor has been saved the Medical Department at Camp Jackson, South Carolina, by a system of Public Health Nursing which was inaugurated and put into effect there some time ago. This nursing service is similar to that provided in cities and is extended to all families in this part. This experiment has met with such marked success that the Surgeon General is desirous of its application wherever possible.—*Med. Mil. Review*, Oct. 15, 1920. *H. N. C.*



Public Service and Personal Prosperity.—When health department budgets are not passed and are cut down by an unsympathetic board, or public health jobs, requiring long training, graciously offer salaries of an exasperating lowness, the public health worker in spite of his devotion to the public service, is tempted to look wistfully toward other fields or enviously on the trade unions. "Right to Strike" is the title of a play now being produced in London. The idea it implies, of doctors going on strike, seems to shock the audience inexpressibly. On the other hand we see almost daily handsome increases in wages being granted street cleaners, lamp lighters, street car conductors and other such public

servants merely on the hint of a strike. No doubt public health workers have the same right to organize and to strike, but, of course, "professional ethics" will deny their ever even attempting such things. But sometimes, as we have said, we do look wistfully at the way the other fellows are getting on.—*Medical Officer*, Oct. 9, 1920. *H. N. C.*



Conditions in Siberia.—In a discussion of conditions in Siberia, Mr. Ralph Mosteller, formerly assistant bacteriologist for the Health Department of Atlanta, Ga., gives some very pertinent facts. He has been engaged for a couple of years in the Red Cross Russian Hospital at Vladivostok, making trips for purposes of inspection to other places. Speaking of Nikolsk, which is about 40 miles from Vladivostok, he writes: "There were approximately five hundred patients. On the staff were two doctors and three nurses. Both doctors were disabled by illness and two of the nurses were unable to work, leaving but one nurse to care for the five hundred patients, many of whom were at the verge of death. There were no drugs, not even Epsom salts nor castor oil. The dying persons were on beds of rags and filth was everywhere. There could be no conditions imagined that could equal the actual suffering and inadequate service found in this hospital.

"The Red Cross immediately furnished medicines and other supplies, including clothing but there was no way by which nurses or doctors could be secured, as those in the hospitals were kept busy day and night and then could not reach all under their care as thoroughly as would have been wished. There were few Russian doctors, the better class of Russians being scarce in Siberia.

"The important fact that should be impressed on Americans," adds Mr. Mosteller, "is that Siberia is in a condition where aid is essential and yet the needed assistance cannot be rendered at this time. Many thousands will succumb to starvation and exposure during the present winter season. There is no immediate prospect for material improvement in conditions, and what the ultimate outcome may be no one can even guess."

Is the Falling Birth Rate to Be Deplored?

—The author, who has written extensively on the subject of birth control, takes as his thesis the falling birth rate and analyzes the responsible factors. He discusses the question in relation to over-population and to the world's food supply, from the ethical aspect and from many other angles. In conclusion the author maintains that we have little need today to deplore the falling birth rate. In one respect, however, is the reduction in the birth rate deplorable and that is in its differential distribution. It is to be regretted from the eugenic point of view that at present the reduced birth rate operates chiefly among those classes which are best fitted to be parents, whilst it operates little if at all amongst those classes which are least fitted. It is not reasonable to suggest that the better classes who practice reasonable restraint in the matter of the size of their families should in this matter copy the reckless proclivities of the lower classes. Far better that we should endeavor to teach the latter to emulate their betters.—C. K. Millard, *Medical Officer*, Dec. 11, 1920, 251. (D. G.)



N. O. P. H. N. Drive for Members.—The National Organization for Public Health Nursing is undertaking an important piece of work in its history. It is beginning this month a campaign for increasing its membership, interesting the young women of the country in the profession of public health nursing and inspiring the public in general to a larger measure of devotion to matters of public health. Through the press and through committee activities the entire field of school, industrial, district and the other types of public health nursing will be presented to America's millions of people until there is a universal insistence upon the establishment of this form of nursing in every community of the United States and the lifting of nursing in general to a level not reached by it in the past. It is providing for the spread of its message first through the assistance of the public health nurses who are members of the organization. With this in view, it is the plan to attempt to enroll every one of the 10,000 public health nurses in the country in the National Organization as a foundation for the greater membership of lay supporters.

Nurses eligible may apply for membership by letter to national headquarters at 156 Fifth avenue, New York City.



Requisitioning Unused Land for Playgrounds.—Land which is not in use and which is not expected to be used in the immediate future may now be requisitioned in Austria by national, provincial or municipal authorities and used as public playgrounds. Provisions to this effect were contained in a law enacted by the Austrian National Assembly on July 22d, according to a report received by the Children's Bureau of the U. S. Department of Labor. This land will be placed in charge of organizations interested in the promotion of outdoor recreation and will be used both by school children and young persons above school age. The owner of the land will receive suitable compensation for its use. The question whether requisition is permissible will be decided by the provincial government, which will also decide the amount of compensation when agreement is not reached on that point.



Disappearance of B. Diphtheriæ From Throats of Carriers.—In a recent study from Baltimore it was shown that approximately 18% of 800 healthy children were carriers of diphtheria bacilli at one time or another and about 11% of these were carriers of virulent organisms. It was also shown that a higher percentage exists in pathological throats than in normal throats. More recently Hartley and Martin have reduced to a mathematical formula the rate with which diphtheria bacilli disappear from the throat of convalescents. By the use of a logarithmic equation they have found that approximately 5% of those remaining each day after the fifth day become free from the bacilli in 24 hours. In their work three successive negative cultures taken at weekly intervals were required. If, however, only two successive negatives had been required, then the number free each day would have been 5.4%, and if only one negative had been required the rate would have been 7.1%. Expressed in another way, the number discharged would have been increased by 9.3% and 29% respectively if two negatives or only one had been required.—*Jour. A. M. A.*, Dec. 18, 1920, 1721 (D. G.)

STATE HEALTH NOTES— LEGISLATION

National. Congressional Procedure. —

In connection with these monthly reviews of national legislation relating to health, a description of the procedure necessary in Congress for a bill to pass may be of interest to readers of the JOURNAL. When the framers of our government established Congress they intended the Senate to represent the states and the House of Representatives the people. Both branches have equal powers of legislation, however, and no bill can become a law until both branches have passed it. Bills may originate in either branch, except measures for raising revenue, which can originate only in the House. Sometimes a bill is introduced simultaneously in both branches of Congress.

Any member may present a bill, either one he has prepared himself, or one which has been submitted to him from outside, but which goes in his name. The bill is then referred to the appropriate committee. After giving the bill due consideration and holding any necessary public hearings, the committee may do one of four things: 1, make a favorable report, which generally assures its passage; 2, redraft or amend it and report it favorably in its new form; 3, make no report, which is equivalent to killing the bill; 4, make an adverse report, which also kills it. More than 20,000 bills are introduced in each session of Congress and most of them never get out of committee. After a favorable report the bill is put on one of the calendars. In the House there are three, the Union Calendar, relating to revenue, appropriations and public property; the House Calendar, other public bills; the Private Calendar, relating to private bills. In the Senate appropriation bills have precedence. Under certain conditions bills may be called up out of turn, such as those of special importance. Every bill must have three readings, two by title and one as a whole. When read entire, amendments may be offered by members. It must then be voted on, in the Senate by calling for ayes and nays, in the House by *viva voce* vote, rising vote, taking the vote by tellers, or recording the ayes and nays, according to the demands of the House. When a bill has passed either branch of Congress it is sent to the other to be acted

upon. Here it may be passed unchanged, defeated or left in committee, or passed with amendments. In the latter case it is returned to the original chamber for a vote on the amendments. These may be passed, but if not, each branch appoints three members as a committee on conference to settle the disputed points. When this committee reports the bill may be finally passed. It is then enrolled and signed by the vice-president for the Senate and the speaker for the House of Representatives and then goes to the President to sign or veto. If he signs the bill or fails to sign it or veto it within a specified time it becomes a law.

Sheppard-Towner Bill. — The Senate passed the Sheppard-Towner bill for the protection of maternity and infancy on December 18 after several days of discussion. The bill was considerably amended, the annual appropriation being cut to \$1,480,000 and the administration of the bill placed under the U. S. Children's Bureau. The bill is now (Jan. 4, 1921) before the House committee and public hearings are being held on it.

Coördination of Governmental Activities.

—On December 14 the House passed Senate Joint Resolution 191, which had passed the Senate May 10. This resolution provides for a joint committee consisting of three members from each branch of Congress to survey the administrative departments of the government and recommend changes to prevent duplication and overlapping and promote efficiency. It is estimated that this survey will take about two years. The bill became a law on the failure of the President to take any action on it, either by signing or veto.

Department of Public Welfare.—A bill, Senate Bill 4542, to create a Department of Public Welfare, has been introduced in the Senate by Senator Knox for Senator Medill McCormick. It provides for a secretary of Public Welfare who shall be a member of the cabinet, and would take over the Public Health Service and Bureau of War Risk Insurance from the Treasury Department; the Children's Bureau and Women's Bureau from the Department of Labor; the Bureau of Education, St. Elizabeth's Hospital, Freedman's Hospital, Bureau of Pensions and Indian Service from

the Department of Interior; it would abolish the U. S. Employees' Compensation Commission and transfer its functions to the Bureau of Pensions; it would abolish the Inter-departmental Social Hygiene Board and transfer its functions to the Public Health Service, and would take over the National Home for Disabled Volunteer Soldiers and the Columbia Institution for the Deaf, Washington, D. C.



Hospital Treatment for Diseased Alien Seamen.—H. R. 71930, which was passed July 30, 1919, and amended by the Senate, was passed by the House December 21. This bill provides that alien seamen afflicted with certain diseases shall be treated in hospitals at the expense of the owners of the vessel. Suspected cases can be removed from the ship. If no cure is possible they can return on the vessel.—(J. A. T.)



California.—At its regular December meeting the California State Board of Health adopted a resolution regarding camp ground sanitation. It is to be applicable to any site within the state of California offered for public use on which persons may camp or picnic either free of charge or on payment.

A water supply in ample quantity and of sanitary quality must be provided to meet all requirements of the maximum number of persons using such a tract at any time. Water of inferior sanitary quality on or near such tract of land to which campers may have access shall be eliminated or purified or posted with warning placards. Toilet accommodations must be provided acceptable to the State Board of Health. Supervision and equipment sufficient to prevent littering the ground with rubbish, garbage or other refuse shall be established and maintained, with fly-tight depositories for the wastes, which shall be conspicuously located. The method of final sewage or refuse disposal shall be subject to approval of the California State Board. At least one caretaker must visit the tract every day that it is occupied. The management of every public camp or picnic ground must assume responsibility for maintaining all sanitary appliances on such ground. Failure to comply with any of the rules shall be sufficient cause for declaring the premises a public nuisance subject to penalty.

The California State Board of Health at the same meeting passed regulations governing the construction and maintenance of slaughter houses. These regulations consider the location, construction, cleanliness, light and ventilation, floor materials, sewage disposal, disposal of by-products, keeping of animals, and toilet and washing facilities. Slaughter houses must be enclosed on all sides, and all walls, ceilings, roofs, floors, doors, fly screens, sewers, etc., must be kept in good repair. They must be kept in clean condition at all times, and rubbish must not be allowed to accumulate. Measures must be taken to prevent the harboring and breeding of rats on the premises. All rooms must be light and ventilated directly from the outside air. All doorways must be fitted tightly and doors, either screen or solid, must be kept closed excepting when in actual use. All openings must be covered with metal fly screen. Floors must be of concrete, asphalt or other non-absorbent material, with proper drainage and drainage system. Regulations provide for the disposal of by-products. Details are established with reference to the construction and fitting of the killing room and cooling room, the hide room and the pens for the animals.



Indiana.—The State Board of Health will present for the third time to the Legislature which is now in session a full-time health officers and full-time nurses bill. This bill gives permission to the counties of Indiana which so desire to waive the present part-time health officers system and substitute for the same the all-time county health officer and all-time county health nurse. The bill as written requires the appointments to be made from an eligible list supplied by the State Board of Health, and that the appointees pass proper examinations before the Board; also adequate requirements for health appropriations and salaries. The bill also gives power to cities over 10,000 to create through ordinances a health department which will employ an all-time health officer and all-time health nurse. Full constabulary powers are accorded the appointee for the enforcing of all health rules and orders.



Minnesota.—The Minnesota State Board of Health has been active during the past

three months in the enforcement of its regulations by means of criminal prosecutions for violations. A number of individuals guilty of delinquency in treatment have been prosecuted in the municipal courts of St. Paul and Minneapolis and committed to the workhouses of those cities.

During October two druggists were successfully prosecuted in St. Paul for selling venereal disease remedies without prescription and were each fined \$10 and costs. One complaint was filed against a Minneapolis druggist at approximately the same time, but on account of a technical error in the manner of drawing complaint it was found necessary to dismiss this case. One of the large chain drug stores has been a frequent violator of this regulation.

In November a physician was prosecuted in Minneapolis for failure to report cases of venereal disease treated by him and fined \$20 and costs. In December another physician was prosecuted in Minneapolis on the same charge and was fined \$50 and costs.



Missouri—The State Board of Health is undertaking the organization of an Engineering Division and is submitting to the Legislature a bill providing for its authority and support. The U. S. Public Health Service has detailed one of its sanitary engineers to assist in the engineering work in the state. The new Division will have charge of water supplies, sewage disposal, stream pollution, trade waste disposal and allied subjects. This indicates a long step forward in this regard, as heretofore the State has done very little in sanitary engineering matters. An effort is also being made to improve the laboratory facilities of the state for handling this work.

Since Saturday, December 11, 1920, physicians in this state have been required to report all cases of disease designated by the

State Board of Health as "infectious, contagious, communicable or dangerous." This law was passed by the Fiftieth General Assembly and the Board has established a system of reporting communicable diseases and issued the necessary blanks and instructions. The attending physician is held responsible for making the report to the health officer. In cases where no physician was in attendance the head of the household is responsible. Failure to make report is punishable as a misdemeanor.

This new statute, which secures the standardization of the State Health Department, puts Missouri in position to cooperate fully with the U. S. Public Health Service and therefore entitled to receive the benefits of Federal assistance in the control and prevention of disease.

The following diseases are declared reportable: Anthrax, chickenpox, chancroid, diphtheria, glanders, gonorrhea, influenza, leprosy, measles, meningitis (epidemic cerebrospinal), mumps, ophthalmia, neonatorum, plague, poliomyelitis (acute anterior), rabies, scarlet fever, smallpox, sore throat (epidemic or septic), syphilis, tetanus, trachoma, tuberculosis, typhoid fever, typhus fever, whooping cough.



North Carolina.—A recent decision of the Supreme Court of this state affirmed an award of \$10,000 damages to a wife infected with venereal disease by her husband. This decision has broken new ground in the construing of law and is heralded by authorities as a gain in moral progress. The lower court in May, 1920, awarded the damages and the husband filed legal papers carrying the matter to the supreme court. The reviewing of the case by the higher court is long and very legal, but the concluding paragraph is to the point: "In the rulings of the learned judge who presided on trial of this case we find no error."

STATE HEALTH NOTES—GENERAL

National.—To establish a standard table of the heights and weights of children a conference of representatives of the U. S. Children's Bureau, the U. S. Bureau of Education, the U. S. Public Health Service and of various educational and private organizations working for the betterment of children has just been held in New York City. At the present time various tables of measurements are in use by the different organizations engaged in weighing and measuring children. The results of the tests are not comparable; also considerable confusion has arisen because of apparent differences in the standards of normal development as given out by the various organizations. The conference brought out the fact that the various tables are in substantial agreement as to fact, the differences being chiefly matters of presentation. A complete standard table will be prepared by a committee and all future weighing and measuring of children can then be in accordance with this uniform table. The findings of the tests will be comparable and much greater use can be made of the facts revealed.

In speaking of the health situation in this country and its prospects, Surgeon General Cumming seeks to interest the public in the diseases that are constantly with us. He states that it is unfortunate for the people to become so intensely interested in spectacular outbreaks of epidemics and be so little moved by the daily occurrence of common diseases that are preventable which cause many deaths in every part of the country. Of the million and a quarter deaths annually in this country at least 100,000 could easily be prevented by the application of available medical knowledge. For example one of the diseases which becomes prevalent about this time of the year is diphtheria. This disease is responsible for about 15,000 deaths in the United States annually. Practically every one of these deaths could be prevented, for not only have we an effective anti-toxin for treating the disease when it occurs, but what is still more important, we are now able by means of a simple skin test to determine which children are susceptible to diphtheria and, this ascertained, we can effectively immunize them so as to protect them against this disease.

The 10,000 or more deaths from typhoid fever that occur annually in the United States could also be largely prevented if communities everywhere would make certain that their water and milk supplies were protected and if simple precautions were taken in homes where typhoid fever occurs. It is encouraging to know that smallpox has been so well controlled that at present the average deaths from it in the United States number only 400 annually. Nevertheless, these 400 deaths are entirely unnecessary, for vaccination has long shown itself an effective means of control.

In almost every community in the country the wastage in infant lives is still enormous, especially when contrasted with that in New Zealand, for example, where the death rate is only 50 per thousand births in the first year of life as against 100 in the United States.



California.—At the present time an arrangement is in force with the California State Board of Health for the immediate registration of public health nurses who have secured their R. N. After April 1, 1921, all nurses will be required to take an examination if they wish to secure public health standing. Under the regulations the degree R. N. is necessary before certification.



Indiana.—A leper was reported in Indianapolis November 12th and examination confirmed the diagnosis. He evidently acquired his disease when a soldier in the Philippine Islands. He is entirely under the care of the State Board of Health, which has ample appropriations for the care of lepers.

Rotary Clubs, Kiwanis and Optimist Clubs over the state of Indiana requested some time ago lectures upon public health questions from the State Board of Health; therefore for the past year the secretary and assistant secretary have appeared almost weekly before such clubs, setting forth the great economy of looking after the public health. In every instance where these talks have been given the clubs have responded with strong resolutions supporting the public health cause.

Mr. J. Craven, according to the statutes, has been appointed a member of the Board of Sanitary Commissioners of the Sanitary District of Indianapolis to succeed himself.

Mr. Craven was at one time the sanitary engineer of the State Board of Health and resigned to undertake a like service of the United States Public Health Service. Subsequent to this he was an engineer of the Terre Haute Water Works Company.



Illinois.—The State Department of Public Health, through its Division of Engineering and Sanitation, has made a preliminary survey of all swimming pools in the state with a view to making detailed inspections of each pool later. Subsequently a state bulletin will be prepared giving full information relative to construction and operation of swimming pools.

St. John's Sanatorium, located on a farm near Springfield, Ill., opened large quarters for crippled children in the new building January 1st. This work will be under the general supervision of Dr. Clarence W. East, chief of the Division of Child Hygiene and Public Health Nursing of the State Department of Public Health, and will consist largely in hygiene and the reëducation of victims of poliomyelitis.

Dr. Frank P. Auld of Shelbyville has been appointed district health officer, Division of Communicable Diseases, State Department of Public Health.

Mr. Stanley T. Barker, formerly employed in the Engineering Division of the Chicago Sanitary District, has accepted a position as assistant sanitary engineer in the Division of Engineering and Sanitation of the State Department of Public Health.



Kentucky.—The United States Interdepartmental Social Hygiene Board has recently assigned a staff of four social workers to Dr. A. T. McCormack, secretary of the State Board of Health of Kentucky, to establish a Bureau of Protection of the Armed Forces of the United States Against Venereal Disease.

The program of this bureau is, in brief, as follows:

1. Search for foci of venereal disease that may be a menace to soldiers, sailors and civilians.

2. Identification or discovery of individuals who are carriers of venereal disease and who may be a menace to soldiers, sailors or civilians.

3. Inquiry into the reasons and conditions

that have led these individuals to become carriers of venereal diseases.

4. The preparation of systematic, accurate reports covering the activities of the protective social agents of the board.

5. The presentation of these reports to law-enforcing agencies through proper channels.

6. Follow-up investigations covering—

- (a) The use made of evidence submitted to law-enforcing agencies. The enforcement of laws relating to the prevention of venereal disease.

- (b) The marshalling of coöperative community forces for the enforcement of laws for the "care of civilian persons whose detention, isolation, quarantine or commitment to institutions may be found necessary for the protection of the military and naval forces of the United States against venereal disease."

- (c) The conduct of individuals subsequent to their medical or social treatment for the prevention of venereal disease and the eradication of prostitution.

- (d) The care of persons while they are quarantined, isolated or committed to institutions as a measure for the protection of the armed military and naval forces of the United States.



Michigan.—Public health nursing campaigns, instituted by the newly installed bureau of Child Hygiene and Public Health Nursing of the Michigan Department of Health, have been completed in more than 30 counties of the state. By spring it is expected that all of the 83 counties will be canvassed. Harriet Leck, R. N., Director, formerly superintendent of nurses of Grace Hospital, Detroit, is endeavoring to supply public health nurses for counties which at present have no nursing systems.

St. Clair county and the city of Port Huron have combined to form a branch laboratory of the Michigan Department of Health. Florence Shelley, formerly of Harper Hospital, Detroit, will be in charge.

Born of war-time conditions, Michigan's campaign against venereal diseases has increased in scope and efficiency until at the present time, three years after its launching, the work is said to compare favorably with what 30 years have accomplished in the fight against tuberculosis.

During 1920 cases of venereal disease reported by Michigan physicians to the State Department of Health reached 19,793. Since the law requires doctors to report all cases this number approximates the total number of new cases and cases that have reappeared in the past year.

Practically all of these cases were under physicians' treatment, as is proved by the 31,508 prescriptions which were reported by druggists throughout the state. Under a Michigan law, which has been in effect 18 months, every druggist is required to report prescriptions and is forbidden to sell patent remedies for syphilis and gonorrhea.

Supplementing the work done by private practitioners, 76,501 individuals were given treatment in 11 city clinics. This phase of the work also shows an increase over preceding years. Nearly all the patients in the clinics come voluntarily, no one being accepted who is able to pay for private treatment.

Believing city clinics will effectively assist in curbing venereal diseases, three additional clinics will be established soon at Port Huron, Alma and Escanaba. Hospitalization of patients is gradually being done away with, the Board placing emphasis on the clinical treatment which enables affected persons to continue as wage earners while being cured.

Boasting the first traveling health clinic in the United States, with facilities for physical examination of children and adults, the State Department of Health has now added to the clinic a special division where venereal diseases may be diagnosed. One of the first states to combat venereal diseases actively, Michigan is now said to lead all states in control work.

The venereal disease division of the traveling clinic is already proving of service to people of the state and during the short time since it was founded hundreds of persons have come for examination and to have blood tests made.

Started early in September, the traveling clinic has visited fifteen counties and held clinics in forty-one towns and villages with the expectation of covering very soon every county in the state.

Wiped out for a number of years by general vaccination which relegated it to the role of one of the minor diseases smallpox

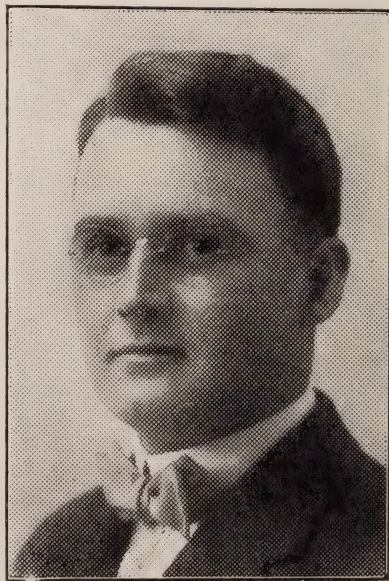
is again threatening to become epidemic in Michigan.

Because Michigan has acquired an unvaccinated population, and therefore a susceptible population, smallpox endangers the entire state at the present time. People who were vaccinated a number of years ago have outgrown their immunity, and parents feeling a sense of security from the disease have neglected to have their children immunized by vaccination.

Since January 1, 3,719 cases of the disease have been reported to the Health Department, compared to the 2,070 cases in 1919. While some of the increase can be attributed to better reporting, the situation is serious enough to command attention. Wyandotte, Sault Ste. Marie and other cities have already experienced small epidemics.



Maine.—In the recent months the Maine Public Health Association has been carrying on a campaign that for activity and



WILLIAM A. HARRIS

This is the missing Secretary of the Maine Public Health Association. Description—Age, 33; weight, 160 pounds; height, 5 feet 8 inches; light brown hair; blue gray eyes; good teeth; spectacles; three-inch scar on left cheek; left hand slightly withered; slight limp in left leg. Send any information to the Association at Augusta, Me.

success has been remarkable. The unfortunate fact that the executive secretary of the association became mentally deranged through overwork and illness and while in this condition disappeared from his home has been stated in the January News Letter. A picture of the young man is here given against the possibility that he has made his way to some hospital or haven and is still alive.



Missouri.—In coöperation with the U. S. Public Health Service, Missouri has established a Division of Child Hygiene and a Division of Venereal Diseases.



Mississippi.—The Mississippi State Board of Health is developing upon a careful basis a Bureau of Child Welfare and medical inspection of school children. Dr. Edith B. Lowry of the U. S. Public Health Service has been temporarily in charge of this work.

This bureau will have for its objectives the following activities:

1. Weigh and measure all school children.
2. Physical examination of school children.
3. Follow-up work by public health nurse to obtain correction of defects.
4. Nutrition clinics.
5. Health center in each county.
 - (a) Baby and pre-school clinics.
 - (b) Prenatal clinics.
 - (c) Classes for young mothers.
 - (d) Clinics as needed locally.
6. County health organization.
7. Prenatal letters.
8. Birth registration—baby book.
9. Newspaper service, educational.

The State Board of Health is enlarging its activities in all of the bureaus and contemplates more active and aggressive health work during 1921 than in any year of its previous history.



New Jersey.—A post-graduate course in Child Hygiene was opened in Trenton in November with an attendance of more than 50 nurses by the New Jersey State Department of Health in coöperation with the State Normal School. Training is given in fundamentals of child care, in applied hygiene, in social case work, and in the many

other phases of public health work with which child hygiene nurses come into contact, in their direct relation to child hygiene work.

Most of the success of a child hygiene nurse depends on her ability to teach the mother how to take care of herself and her baby and the school child what to look out for, so that pedagogy has been given a prominent place in the program of the course. Lectures will be given describing the various child caring institutions and resources of the state, counties, cities and towns so that the child hygiene nurse will be able to refer to the proper agency cases that come to her notice that need attention. Similarly, labor conditions will be presented to give the nurse a better understanding of the actual facts in regard to laws in New Jersey for the protection of pregnant women, married and unmarried, and for the elimination of child labor. The subjects on the program include control of contagious disease, prenatal care, school hygiene, home economics, oral hygiene, mental hygiene, baby keep-well stations, housing and home visiting, pediatrics and child hygiene, vital statistics and records.

Sixteen series of lectures occupying all day on successive Fridays will be supplemented by fifteen sessions of field work which will include visits to health offices, laboratories and clinics and welfare stations.



New Mexico.—During December an extensive educational campaign has been carried on in high schools in New Mexico. "Keeping Fit" exhibits for boys and girls, with lectures, have been presented in the high schools in Valencia, Socorro, Dona Ana, Otero, Lincoln, Guadalupe, Quay, Curry, Roosevelt and De Baca counties by Dr. Don L. Gudakunst, and in Mora, Colfax and Union counties by Mr. H. F. Gray. A series of lectures on public health, illustrated by lantern slides, has been presented in Torrance, Lincoln, Eddy, Lea, Roosevelt, Curry and Quay counties by Dr. G. S. Luckett. In the smaller towns where electric light was not available, the stereopticon was operated by means of storage batteries, or direct from an automobile generator.

New York.—Dr. Hermann M. Biggs, State Health Commissioner, who has been in Geneva, Switzerland, attending the second meeting of the International Red Cross Societies, has returned. He was one of the three Americans at the organization meeting in 1918.

A health coördination committee has recently been organized in Lancaster, having named its functions as

- (1) Coördination of health activities in the community;
- (2) Promotion of public health education;
- (3) Support of approved health measures and coöperation with the public authorities in meeting emergencies relative to public health.

The following are the members of the committee: John O. Garretsee, Jos. T. Schaefer, Miss Emma Hoffeld, Dr. Clarence L. Mackey, Dr. Ernest N. Erwell, all of Lancaster, N. Y.

Through the efforts of Dr. Clark, the Board of Health of Lackawanna is to employ a full-time nurse for the parochial schools of that city.

During the month of November three tuberculosis clinics were held under the auspices of the State Department of Health at Ellenburg, Mooers and Dannemora, in Clinton County. In all 45 patients presented themselves for examination. Of these 8, or 18 per cent, were found tuberculous; 16, or 35 per cent, suspicious; 21, or 47 per cent, negative. Patients examined at the clinics presented cards of admission from their physicians. A portable X-ray machine was furnished by the State Department of Health. Detailed reports, including the physical findings and interpretation of X-ray plates, together with the recommendations, were mailed to the patients' physicians.

At the group consultation clinics held at Walton in November, the State Hospital Commission provided a force of stenographers from the Albany office and from the Binghamton State Hospital to augment those detailed by the State Department of Health, thus enabling the consultants to dictate their notes during the examination of their cases. Seventy-one original examinations and 172 consultations were made. No effort was made to reach patients directly, the sole object of the clinics being

to supply the local physicians with consultation service needed but not otherwise procurable.

In all private institutions having a large number of child residents the Department of Health of the City of Buffalo is using the Schick test to determine which of the children are non-immune to diphtheria and to such toxin-antitoxin immunity is being given. It is expected that in the near future the same preventive measures will be used in the public schools of the city.

In Canadaigua, State Sanitary Supervisor Dr. B. R. Wakeman, assisted by Dr. Harry W. Smith, school physician, is applying the test to all school children presenting cards signed by their parents giving the necessary permission.

From the report of Miss Emma R. Cross of Medina we copy the following from "Things Accomplished by One Public Health Nurse," which is a part of the work she has been able to do during one scholastic year:

"Fifteen rural school districts visited preparatory to subsequent inspection; school census made in four districts and reports thereon. Over 1,000 children inspected and notification cards sent to parents. One hundred and fifty postural defects taken up in conference with teacher of physical training.

"Corrections secured only through personal follow-up by nurse: Glasses provided, 32; teeth repaired, 49; adenoid and tonsil operations, 18 (in 12 of which latter cases nurse gave the anesthetic); 1 case circumcision.

"Other services: Accompanied 44 children to physicians; 7 cases partial blindness needing care reported to State Commission for the Blind; 26 infant welfare visits at homes; 164 actual nursing visits; 3 private nurses relieved each one-half day and a night; one patient accompanied to hospital in neighboring city; 365 classroom inspections; 10 evening classes conducted in home nursing; 4 classes in sex hygiene; secured more sanitary conditions in several school buildings; made one visit (and report thereon) to Niagara County Tuberculosis Hospital; assisted at one rural tuberculosis clinic; clothing secured for some needy children; educational literature distributed; coöperating with the teacher of domestic science, milk lunches established;

county tuberculosis seal sale conducted; the physical defects of all children in two special class rooms corrected."

The Valeria Home, which was established and endowed by the will of the late Jacob Langeloth, president of the American Metal Company, has just completed a successful season of its summer camp for convalescent business and professional women on its thousand-acre plot in Westchester County, near Croton-on-Hudson, N. Y.

Plans are now being made for the construction on the same site of a year-round home for recreation and convalescence, designed for men and women of education and refinement who are able to pay a small weekly charge for their care and entertainment. Tentative plans call for the construction of about seven houses, each accommodating about 20 persons, an administration and general service building and a club house for indoor and outdoor recreation.

The executive offices are at 7 East Forty-second Street, New York City. Mrs. Valeria Langeloth is president; Mr. Gwyn Walker, executive secretary, and Dr. Carl E. McCombs, consulting director.



New York City.—Plans of the New York County Chapter of the Red Cross for 1921 provide for service to nearly a million persons in that city during the year, according to John S. Ellsworth, chairman. Three hundred thousand will be benefited through health work alone. Following the peace time policy of the organization, this will be largely of an educational and preventive nature, but extensive plans have been made along curative lines.

At child health stations established in various parts of the city hundreds of undernourished school children will receive special care under the supervision of child health specialists and trained nutrition workers. The children will report for instruction at the health stations every week. This will be supplemented by follow-up work in the homes with the parents. In addition to being brought up to normal weight, a process which takes from two to four months, the children will have other physical ailments remedied, such as diseased tonsils and adenoids, ear and eye defects.

Important experimental work is being

undertaken at one of the public schools in coöperation with the Health Department. To show what can be accomplished through an up-to-date efficient health service, the Health Department has installed a half-time physician and full-time nurse in the school. Ordinarily there is only one nurse for three schools. The Red Cross will operate several nutrition classes, conduct a dental clinic and give instruction in dental hygiene at the school. In this work it will be assisted by 150 dietitians and public health workers from Teachers' College, Columbia University.

The first extensive health information bureau in the city has been opened at Greenwich House, on the lower west side of the city. The bureau is prepared to meet the needs of the 76,000 residents living in that district.

New York University, New York City, is giving a course in labor and employment management, of which the second semester, February 3 to May 12, is to be devoted to plant sanitation and hygiene and welfare work. The course will include the study of accident prevention through methods and organization; of fire prevention through methods and apparatus; the medical and surgical features of treatment, the emergency hospital, and physical examination. There will be lectures on hygiene, health conservation and health education. A portion of the work will cover factory conditions, heating, lighting, humidification and ventilation, sanitariums, lavatories, lockers and laundry rooms. In addition to some of the commercial problems like profit sharing and bonuses, the question of hours as affecting the worker, will be discussed, together with recreation, games, clubs and vacation camps. The course is under the management of the School of Commerce of the University.

Mrs. Isaac L. Rice, of New York City, who has been felicitously christened by Figaro "that pious fairy of silence" and who among other things initiated the quiet zone about schools and hospitals as well as a successful movement towards a sane Fourth of July, has taken up again her campaign for the suppression of unnecessary noise. Eight or ten years ago her beginnings were made, resulting in the silencing of the unnecessary tooting of the steamers on the Hudson

and other needless noises. Mrs. Rice has in recent years been active in war work and the very necessary post-war charities, but has now become again an influence towards the suppression of noise in New York City. This is quite largely from automobiles, although the regulations would make it possible for a family to suppress legally the needless noise of a family next door in an apartment house. If a tenant keeps a barking dog, the health department, under its regulations, can invoke the act of public nuisances. Dr. Copeland seems to be fully in agreement with Mrs. Rice, and has begun on the part of the health department of the city an official movement towards the suppression of unnecessary noises.



Ohio.—The most serious typhoid fever epidemic in the history of Ohio is that which occurred in the city of Salem during October, November and December. A total (to December 10) of 866 cases of the disease developed in a population of about 10,000. A leaky tile pipe line used in conveying water from one group of wells to the reservoir which supplied the distributing system of the city water supply was the cause. It is presumed that material from nearby sewers leaked into the water line when the pressure in the latter became low. The State Department of Health had a force of ten members on duty in Salem while the epidemic was at its height, and as soon as the pollution of the water supply was discovered, installed an emergency chlorination outfit for its disinfection. The State appropriation of \$5,000 was employed in providing consulting medical and surgical service as a means of keeping mortality at a minimum. The services of Dr. Henry A. Christian of Harvard Medical School and Dr. Charles F. Hoover of Western Reserve Medical School were obtained as medical consultants, and a surgical team from Cleveland was sent into Salem. By December 10, approximately five weeks after the epidemic reached its peak, 23 deaths had been reported, and health authorities were hoping that a new record in saving of lives of typhoid victims would be established.

Using the Salem epidemic as an argument, the State Department of Health plans to ask the coming legislature for a law requiring regular bacteriological examinations of public water supplies. Such examina-

tions are not required by existing law, and had not been made in Salem.

The tile pipe line which was responsible for the outbreak was installed at a time prior to the adoption of the present system whereby public water supply installations are subject to the approval of the State Department of Health.

A series of free tuberculosis clinics, to be held in various counties of Ohio during the coming year, is planned. Physicians from the Ohio State Sanatorium will conduct examinations of suspected tuberculosis cases and will carry on a general educational program in regard to the disease. The State Department of Health, the local health department, the Ohio State Sanatorium, the Ohio Public Health Association and the Ohio State Medical Association are in cooperation in plans for the clinics.

Arrangements for the demonstration of rural public health work, to be conducted in Portage County during 1921 under the direction of the Ohio State Department of Health, are going forward rapidly. The county health department will be supplemented by additional personnel to be supplied by the State Department of Health, the Red Cross and the Ohio Public Health Association. Funds to aid in financing the program are being raised by popular subscription in Portage County. The program of the demonstration will be put into operation gradually, the development of adequate nursing facilities being the first phase to be carried out. It is planned to use Portage County as a school for health commissioners from other counties in the state while the demonstration is in progress.



Cincinnati, O.—The death rate for 1919 was 15.9 per 1,000 of population, a low mark for Cincinnati. The banner year, however, is 1920, with a rate of 15.1. Expressed in another way, there were approximately 300 deaths less than in the preceding year. The average rate for the last ten years, not including the abnormal one of 1918, was 16.7 per thousand.

The cumulative effect of public health work, social service and a higher standard of living, is reflected in the relatively small number of deaths from tuberculosis, 625, as compared to the annual toll of 950 in the past decade.

The small number of deaths, 29 per 100,000 of population, caused by gastro-enteritis in children under two years, is a tribute to infant care, public health nursing and the purity of the milk supply. In 1910 the rate was 103.8.

With a nucleus of the tuberculosis dispensary, which was turned over to the city by the Anti-Tuberculosis League, there has been developed a health center containing four separate bureaus, tuberculosis, venereal disease, mouth hygiene, and child hygiene, for the benefit of those who are unable to pay for health supervision.

In appraising public health activities for 1920, mention should be made of the trachoma clinics conducted by the U. S. Public Health Service, under the auspices of the State and local Health Departments; the campaign against malnutrition which has been made the basis of school medical examination; the care of immigrants under joint supervision of the Health Department, Better Housing League and Community Service; the movement for the control of cancer; the campaign for modern sanitary flush toilets in every home, and the splendid service of the laboratory.



Pennsylvania.—The University of Pennsylvania has just completed a free course of public lectures devoted to timely phases of the public health problem. The ten lectures in the series touched upon school medical inspection, relation of occupation to health, reconstruction of under-developed children, role of insect and rodent carriers, milk supplies, child hygiene, statistics, tuberculosis and epidemic diseases. In its Saturday course of free public lectures health topics have been considered with other subjects. A lecture on "Some Applications of Bio-chemistry" has already been given, but six others are still in prospect—"Death From the Standpoint of the Physiologist," "Important Phases of Public Health," "Relation of Bacteria to Health and Disease," "Elimination of Vibration and Noise," "Advances of Medicine" and "Louis Pasteur." The lecturers are members of the University Faculty.



Texas.—Persons interested in public

health in this state are calling attention to the fact that there is not a single hospital bed in the state nor is there any sanatorium for tuberculous negro patients. It is asserted that through the universality of the negro as servants, laundresses, barbers and waiters, there is danger for the white population. The servants handle raw food, serve it after it is cooked and prepare the food for children and have in these processes many opportunities to transmit disease. In its estimate of the distribution of the disease in the state the Texas Public Health Association asserts that the estimate of deaths of negroes from tuberculosis is more than 6,000 a year, with a probability of 50,000 persons afflicted with the disease.

The Texas Water Works Association has made arrangements for schools of instruction at Texas University and Baylor to teach water works operators the principles of water purification, including filtration. The purpose of the courses is to afford to cities an opportunity to have better domestic water supplies through instruction given to their assistants in the water departments. The courses include only one week of intensive study and there are no charges for instruction, and no laboratory fees. The cities of Texas have been urged to give leave of absence with pay to employees so that they may attend these schools.

"Scales for every single school in the state," is the slogan of Miss Pearl N. Hyer, R. N., public health nurse of the Texas Public Health Association, who emphasizes the fact that the weight of a child is one of the best indications of good or bad health.

This nurse, who is examining Texas school children in all parts of the state, gives entertainments to help earn the money for scales in the schools where she does examination work. In the playlet, "The Health Fairy and Cho Cho, the Health Clown," she impersonates the Fairy Good Health, and in this way impresses upon the children the principles of good hygiene.

In examination work in the Lone Star State it has been found that nearly 50% of Texas children are underweight, indicating lack of proper food at the proper time, nervous strain, or not enough sleep.

INDUSTRIAL HYGIENE AND OCCUPATIONAL DISEASE

Abstracted by Drs. E. R. Hayhurst and E. B. Starr.

Rest Pauses and Increase of Production.

—This Report No. 10, entitled "Preliminary Notes on the Boot and Shoe Industry," mentions one experiment with rest pauses on a plan in which two out of a team of three women, working on presses, worked 40 minutes while one rested 20 minutes, and then replaced one of the others. Thus each one actually worked 30 hours per week instead of 46. A considerable increase of output followed. This type of output was more noticeable among the unskilled and less robust, than among those whose output was high before rest pauses were introduced. The results were to the advantage of both employer and employee. The output per machine was increased about 50%; and if one member of the team was absent the press could still be worked; the employees were contented, and accidents were reduced. It was also found in another investigation that the practice of ceasing to work on Saturday was justified because of low hourly output with overhead charges remaining the same.—*Industrial Fatigue Research Board* (Great Britain), Report No. 10, 1920. (See *The Lancet*, December 4, 1920, p. 1154.)

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Posture in the Workshop.—The British Home Office has recently directed attention to the question of posture in a pamphlet entitled, "Seats for Workers in Factories and Workshops." Several examples of workers' chairs are illustrated, some adapted for use at the work-bench, and others, taking up very little room, which are suitable for attaching to the walls of the workshop or to pillars, where they exist. Since workers vary very much in height, it is essential that the chairs should be adjustable. To be of use the support to the back should only be slightly sloped away from the vertical, and the support should usually be such as to assist the lower part of the back. For work necessitating alternate standing and sitting, a seat that can be readily pushed out of the way when the operator stands up is essential. The Marshall chair is a

good example of this pattern, and it has given valuable results where it has been introduced in the United States by Mr. Frank B. Gilbreth. This seat has been found extremely useful, since with it crippled soldiers are able to take up bench work where this had been their pre-war occupation.

Seating, if supplied, should prevent the onset of fatigue. This is only done when a healthy posture is encouraged. There must be no reaching too high or too low, nothing that tends to prevent the full expansion of the chest or in any way encourages a cramped position of the body. The essentials of a good chair are as follows: Sufficient depth from front to back; a rounded or sloped front edge; adequate supports for the feet, adjustable at a suitable height; while the seat itself should be adjustable for height, and, where a back support is supplied, this should not be too high or too far out of the vertical.—*Lancet*, Oct. 16, 1920. (D. G.)

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Determination of Aniline Vapors in the Air.—The writer investigated several methods and concludes that the Pettenkoffer method is the best method of determining quantitatively the presence of aniline vapors in the air. Her results showed that aniline was present in the air surrounding buildings where aniline and aniline products are made, its presence being greater near the floor than at the respiration level.—Miriam S. Iszard, M. A., *Jour. of Industrial Hygiene*. November, 1920, pp. 259-266.

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The Length of the Work Day.—The investigators for the National Industrial Conference Board maintain that the conclusions presented in Public Health Bulletin No. 106, are too sweeping and conclusive, because in the two plants in which the 8-hour and the 10-hour were compared, conditions were not fairly comparable, and that the basis of experience was too small to justify that the conclusions are applicable to industry in general.—*National Industrial Conference Board*, Special Report, No. 14, August, 1920.

PUBLIC HEALTH LABORATORY NOTES

Abstracted by Arthur Lederer, M. D.

Polychrome Methylene Blue Stain for Fresh Tissues.—A number of methods have been published but they all require time for ripening. The shortest time (that described by Terry in the *Jour. A. M. A.*, 74, 1775) required six days. This period for ripening can be eliminated by boiling the mixture, the stain on cooling and filtering being available for immediate use:

FORMULA

	Gm. or Cc.
Water, (distilled)	100
Potassium carbonate	1
Methylene blue	1

The ingredients are boiled in a flask for 15 minutes and allowed to cool. A slight precipitate may form. After filtering, the stain may be used at once. The precipitate should be allowed to dry on the filtered paper. This may be dissolved off with 20 or 25 cc. of 95% alcohol and added to the filtrate. This stain keeps well and, if anything, improves with age. The efficiency of the stain is considerably increased by the use of a mounting fluid made according to the accompanying formula:

MOUNTING FLUID

	Cc. or Gm.
Water	75
Sodium chlorid	8
Resorcin	2
Glycerin	25

This efficiency depends on the resorcin, which sharpens up the red.—Fred Thibault, *Jour. A. M. A.*, 75, 1423, (1920).



Technic for Staining Sputum for Tubercle Bacilli.—The method of staining sputum for tubercle bacilli recommended by the author takes less time than the ordinary method and raises the percentage of positive results by about 25. A thick portion of the sputum or several mucopurulent pellets are selected and transferred to the slide; one drop of NaOH is added and the sputum emulsified with the aid of heat into a transparent gelatinous mass which is spread evenly. The slide is dried in the incubator, then immersed in carbol-fuchsin, warmed to incu-

bator temperature and allowed to remain in the incubator fifteen minutes. It is then washed in equal parts of Esbach solution and water, decolorized with 25 percent nitric acid until faintly pink, washed with water and alcohol and counterstained with malachite green (1 part of saturated alcoholic solution in 19 parts of water) for 30 seconds to one minute. Malachite green gives a soft ground work in strong contrast to the bacilli and materially lessens the labor of search.—H. Distaso, *Lancet*, Jan. 3, 1920, 19.



Influenza Bacillus Dies In Mixed Culture.—A fairly representative group of strains of *B. influenza* were inoculated in mixed culture with *B. xerosis*, *B. diphtheriae*, *B. coli*, *M. pneumoniae*, and with staphylococci on a variety of blood-free mediums. The influenza bacillus not only failed to multiply under these conditions but the cultures died out after one or two days. On blood-free agar containing killed cultures of staphylococci and of *B. xerosis*, no growth of *B. influenza* occurred.—J. J. Putnam and D. M. Gay, *Jour. Med. Res.*, 42, 1, (1920), *Jour. A. M. A.*, 72, 1452, (1920).



Are Serum Disease and Anaphylaxis Identical?—The author gives several reasons for his inability to conform to the view that serum disease and anaphylaxis are more or less identical. The solution of this problem by experiments on animals is far from satisfactory, for they do not react to perenteral injections in the same way as man. Thus the first injection of horse serum into guinea pigs provokes no symptoms, whereas the second injection provokes shock, which is usually fatal. In man, on the other hand, a first injection produces in a certain ratio of cases a reaction with definite symptoms of varying intensity. A second injection provokes the same symptoms, but more frequently earlier and more violently than the first injection. The author has given about 18,000 persons prophylactic in-

jections of serum and at least 600 subsequently developed diphtheria for which, in most cases, a second injection of serum was given. Yet in no case was any sign of shock seen. Again, in several cases of meningitis, in which two intraspinal injections were given with a certain interval, no shock was provoked. Serum disease was observed in 35% of 1,669 patients given a first injection of horse serum, and in 77.5% of the 80 patients given a second injection.—Ustvedt, *Norsk Mag. for Lægevidenskaben*, July, 1920; *Brit. Med. Jour.*, No. 3124 (1920).



A Culture Medium for Diphtheria Bacilli.

—The author describes the medium for the culture of diphtheria bacilli: Nine parts of blood serum and one part of a 15% solution of sodium hydroxide are kept at a temperature of 37° C. for 48 hours; after neutralization with hydrochloric acid, four parts of nutrient agar are added and the mixture is heated for half an hour to 105° C. This medium is said to be sterilizable, transparent and stable; it can be poured and requires little blood serum.—Klein, *Deut. Med. Woch.*, March 11, 1920; *Brit. Med. Jour.* No. 3123 (1920).



Formation of Agglutinins by the Typhus Virus.— X_{10} agglutinins were constantly present in rabbits which had been injected with the brain of guinea pigs infected with the typhus virus, thereby proving that the typhus virus produces the same reaction in the rabbit as in the human subject. Intraperitoneal injection of typhus virus in the rabbit produced agglutination of X_{10} in each of the 23 cases examined. The serums were tested at all periods after infection, and it was found that no agglutination of other organisms was produced. Since in the rabbit typhus virus usually fails to produce any disease, changes in the organs if present at all were very slight and secondary changes in the serum did not occur. There can be no doubt that the living virus is the cause of the agglutination, for the killed virus does not cause any agglutination in the experimental animal.—Weil and Felix, *Wien. Klin. Woch.*, July 22, 1920; *Brit. Med. Jour.* No. 3120 (1920).



Tuberculous Meningitis With Normal Cerebro-Spinal Fluid.—The author records

two cases of tuberculous meningitis (in adults) secondary to pulmonary tuberculosis; the lumbar punctures were negative—not only were there no tubercle bacilli, but there was no lymphocytosis or excess of albumin in the cerebro-spinal fluid.—Giroux, *Paris Med.*, July 10, 1920; *Brit. Med. Jour.* No. 3118 (1920).



Relation of Different Strains of Influenza Bacilli as Shown by Cross Agglutination and Absorption Tests.

—The influenza bacillus represents a heterogeneous group of organisms as shown by agglutination and absorption tests. Identical strains occur. No differentiation can be made by these methods between the organisms isolated from normal healthy throats within two months preceding the epidemic and those isolated from the throats of influenza patients. A person may carry in the throat three different strains of this organism at the same time. The morphology alone is unreliable as a means of dividing this group of organisms into sub-groups.—Howard H. Bell, *Jour. Inf. Dis.*, 27, 464 (1920).



Some Variations in Normal Blood Sugar.

—Efforts to change blood sugar percentage of five normal persons by increased or diminished water intake and excretion failed to change the blood sugar percentage. This indicates that for practical clinical purposes the blood sugar percentage method is accurate. Daily variations of blood sugar percentage occurred in five normal persons. These variations seem to depend on changes in the weather.—Solomon Strouse, *Arch. Int. Med.*, 26, 751 (1920).



Bacterial Inhibition (Germicidal Action in Milk).

—The combined evidence of microscopic examination and plate count demonstrates a germicidal property, or actual decrease in numbers of bacteria in raw milk under certain conditions. The germicidal property is destroyed by heating to between 80° and 90° C. for two minutes. The germicidal action is specific, depending on both the individual cow and the species of bacteria. No common relation between agglutination and bacterial inhibition is noted, except that both are destroyed by heating the milk.—William H. Chambers, *Jour. Bact.*, 5, 527 (1920).

Provocative Reactions in the Cerebrospinal Fluid in Neurosyphilis.—Case histories are given to show that after treatment the cerebrospinal fluid, which was negative before treatment, may become positive in all routine tests, or a weakly reacting fluid may become much stronger. This is called a provocative reaction. It may be accomplished by the intravenous or intraspinal injection of arsphenamin. This is compared to the Herxheimer reaction or the production of neurorecurrences and is considered as the laboratory analogue. The provocative reactions are shown to occur in both the ventricular and spinal fluids. This is not a frequent phenomenon and patients with vascular neurosyphilis with negative cerebrospinal fluids may not react in this manner. However, diagnosis may occasionally be made clear in obscure cases. In none of the cases in this series was the provocative reaction obtained with the blood serum. Despite the increase in the strength of the spinal fluid reactions, clinical improvement may result, and continued treatment may again produce a negative fluid.—Harry C. Solomon and Joseph Victor Klauder, *Arch. Dermat. Syphilol.*, 2, 679 (1920).

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Agglutination in Influenza.—Of 30 strains isolated from patients with influenza, 11, or 36%, gave agglutination with the patient's serum. Seven of these occurred in uncomplicated influenza and 4 in influenza pneumonia. Of the remaining 19 negative cases 10 had pneumonia. Of 30 strains only one was agglutinated by heterologous serum.—Kirsten Utheim, *Jour. Inf. Dis.*, 27, 460 (1920).

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Effect of Streptococcus Hemolyticus Infection on the Reaction of the Blood of Rabbits.—The blood of normal rabbits is slightly more alkaline than human blood. Experimental *Streptococcus hemolyticus* infections in rabbits produce a relatively marked acidosis, the pH of the blood varying from 7.65, which is normal, to 7.3 in an extreme case. The development of acidosis in *S. hemolyticus* infections in rabbits does not in itself play any effectual role in the mechanism of resistance.—Lester R. Dragstedt, *Jour. Inf. Dis.*, 27, 452 (1920).

Complement Fixation in Influenza With B. Influenzæ Antigens.—Complement fixing antibodies can be demonstrated in the serum of a considerable number of older children and adults convalescent from influenza by the use of *B. influenza* antigens. These antibodies are much less constantly found in children from 1 to 5 years of age. No definite antigenic relationship could be detected between the 16 strains of *B. influenza* with the serums tested. The results indicate that the influenza bacillus is pathogenic and infects many, if not all, patients with influenza. The complement fixation test cannot furnish sufficient evidence, however, to justify the conclusion that *B. influenza* is the sole etiologic agent in influenza.—Howard H. Bell, *Jour. Inf. Dis.*, 27, 466 (1920).

†

Use of Washed Agar in Culture Media.—

The standard extract medium with washed agar showed in many cases, when market milk was examined, a much higher count than the same medium with regular shred agar. Washing agar reduced its content of calcium and magnesium salts. A few experiments indicated that the removal of these salts was a factor in the cause of the higher counts. This point, however, is merely suggested by the results and not definitely proved. Since certain samples of milk show a higher count when plated on a washed-agar standard extract medium than on the regular standard extract medium, it seems evident that washing removes something detrimental to the growth of certain species of bacteria. This naturally suggests that a further study is needed of the value of washed agar in lines of bacteriological work where it has not been used.—S. Henry Ayers, Courtland S. Mudge and Philip Rupp, *Jour. Bact.*, 5, 589 (1920).

†

Antibody Production in Human Beings After Injection of Pneumococcus Lipovaccine.—Agglutinins, complement-fixing bodies and protective bodies for pneumococci types 1, 2 and 3 are demonstrable in the serum of individuals vaccinated with pneumococcus lipovaccine. These antibodies appear in the serum rather late and are present to some degree for at least one year.—Katharine M. Howell, *Jour. Inf. Dis.*, 27, 557 (1920).

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No. 3

INDUSTRIAL WASTES IN RELATION TO WATER SUPPLIES

WELLINGTON DONALDSON,

Staff of Fuller & McClintock, Engineers

New York City

Read before Sanitary Engineering Section, American Public Health Association at San Francisco, Cal.,
September 14, 1920.

Principal responsibility for preventing stream pollution by industrial wastes should be placed on the plants themselves. But municipalities should not depend upon out-of-date purification plants, but should utilize new methods. State health officers should have regulatory powers under standardized laws conforming to Federal practices.

INDUSTRIAL pollution of water like sewage pollution is an unfortunate accompaniment of civilization. It matters not if the defilement of streams and water supplies by trade wastes is unnecessary for the most part; it is the history of these things that nuisances and injuries are brought into existence before their significance is realized and before measures have begun to be applied. It is another case of locking the stable door too late.

It cannot be said that the problems of trade wastes are new to this country, although it is true that the building up of large urban populations and the remarkable quickening of our industrial life following the Great War, are bringing prominently into view the important relation of trade wastes to our streams and water supplies, an importance long realized in the older European countries.

Already, we witness some of our most important rivers so grossly polluted with industrial waste as to be hopeless of reclamation for water supply purposes.

With few exceptions the large communities of this country derive their water supplies from surface sources such as rivers or lakes. Statistics available would indicate that not less than 40% of the entire population of the United States is supplied from surface sources. From this statement the importance of preserving the purity of the streams and lakes must be evident.

The effect of industrial waste on public water supplies is generally manifested in one or more of the following ways:

1. Disagreeable odors and tastes.
2. Foreign substances which make the water unsightly and unsuitable for use, or else interfere with the proper functioning of purification works.

3. Chemical substances in solution, which though not objectionable to sight or taste, may cause actual damage to water works structures, render the water less fit for domestic or industrial use, on account of hardness or other chemical properties, and may or may not be detrimental to health.

It is obvious that on account of the multitude of waste substances derived from industries the variety of effects on water supplies will be numerous. Only a few of those instances will now be cited where the effects have been generally noticed and are of wide-spread interest. It is not surprising to observe that these instances concern chiefly the wastes incident to the principal or basic industries of the country.

COAL MINE WASTES

From many sections of the coal mining regions reports have come of damage to water supplies by reason of the washings from collieries which blacken the stream and cause disagreeable effects when water supplies are taken from it. Speaking generally, however, pollution of this nature has not proven serious because the impurities consist mostly of suspended coal dust, easily removed by the sedimentation and filtration processes employed in modern purification works.

By far the most serious effects in connection with coal mining operations is that of acid wastes. It is a well-known fact that when coal measures are exposed to the atmosphere, the mine drainage water has a corrosive nature, due to the presence of free sulphuric acid and metallic sulphates derived from the sulphur in the coal. These phenomena occur in both the anthracite and bituminous regions, and have been noted in various parts of the world where coal is mined. Other sulphur-bearing minerals than coal give rise to the same effects.

The mining regions of Western Pennsylvania furnish a striking example of acid pollution, for many of the streams have become so strongly impregnated

with acid waste as to be unsuitable for either domestic or industrial use. Smaller streams present the ochraceous appearance so typical of iron wastes. In the Pittsburgh district it is a familiar sight to note the coagulated appearance of the Monongahela River in pools above the locks as steamboats ply up and down, the coagulation being produced by acid waste. In this particular stream acid has been blamed for many thousand dollars' worth of damage to the structures of the Government dams and to shipping on the river. On water supplies drawn from this stream, the effects have not been so serious as might be imagined for the reason that water purification plants are prepared to neutralize the acid effects with lime or soda-ash, or both, and remove the accompanying iron by filtration before delivering water to the consumer. Water so treated is satisfactory in appearance and of good bacterial quality, but usually has a high degree of hardness which makes it less suitable for general domestic use and for steam-making purposes.

In the handling of acid water by water purification plants, the cost of treatment enters as an important factor. In the instance of one important city in Pennsylvania having a lime and soda softening plant, the acid condition of its supply has become so severe as to force the selection of another supply, on account of the excessive cost of treating the original supply.

In the Pittsburgh district it has been pointed out that acid wastes in the streams have not been entirely detrimental, for they serve to sterilize the considerable sewage pollution and thus have protected from water-borne diseases many of the communities taking their supply from the streams without filtration. Then, too, small amounts of acid wastes are sometimes helpful to rapid sand filtration plants, for after treatment with lime, the precipitated iron takes the place of coagulant that would other-

wise have to be added for successful filtration.

Not all of the stream acidity in the Pittsburgh district, by any means, is due to mine drainage. The numerous tin plate mills, galvanizing works, etc., have all contributed heavily to the general acid condition. In other districts, plants manufacturing sulphuric acid have been blamed for the condition of streams. In the case of manufacturing plants, an improvement has been noticeable in recent years by the development of processes which yield a return on the recovered by-products, such as copperas.

At a few of the coal mines also, successful experiments have been carried out in treating the acid wastes, with a financial return from by-products. The great difficulty about the mining situation is that old and abandoned coal mine workings continue to yield acid drainage in undiminished amounts for years.

COAL DISTILLATION WASTES

Nuisances to water supplies from drainage of gas-house wastes have long been recognized, as is evidenced by numerous statutes governing the subject in the various states. In recent years, the vast increase of the industry of coal distillation, by producer gas plants and especially by-product coke works has added materially to the problems of water supplies by reason of this class of waste products. The wastes from coal distillation plants vary much in composition depending upon the nature of processes, and the degree to which primary products are worked up for the market. The complex group of aromatic substances is frequently designated as "creosote," but for the purposes of this paper it will be sufficient to refer to them as "phenols" (carbolic acid), because phenol and kindred substances, particularly the cresols, persist in the waste products and by reason of their appreciable solubility in water give rise to the greater offenses to public water supplies.

Phenol waste has been directly respon-

sible for odor and taste in water supplies, but usually its effect has been indirect by reason of the facility with which phenols form substitution compounds with chlorine gas and calcium hypochlorite in general use for water sterilization in this country. Substitution compounds so formed have an odor and taste very much more intense than the original unchlorinated substances, which themselves might exist in water in high dilution without being noticed.

The phenomena of substitution compounds were called to the writer's attention in 1915, when investigating the causes of pronounced odors and tastes in the water supply of a large Southern city. In this instance there was 1.0 pollution by phenol waste of the supply itself, which is filtered and sterilized with hypochlorite. The treated water had no taste or odor and failed to give tests for residual or active chlorine, as drawn from the mains. Following the laying of two blocks of freshly dipped cast-iron main, an intensely disagreeable "medicinal" odor and taste, particularly on heating, were noted in the houses supplied by the new pipe, but at no other premises in the surrounding territory supplied with the same water. The cause was traced to the crude "dipping" method of the pipe foundry, whereby a higher proportion than usual of "creosote" or "dead oil" in the pipe dip, without opportunity to "weather," resulted in the phenols being dissolved out to combine with chlorine, forming the intensively aromatic *trichlor-phenol*. It took several weeks of persistent flushing of the new main to get rid of the taste and odor. The same phenomena of chlorine substitution were subsequently noted in a number of other water supplies known to receive phenol wastes from coal distillation.

That such substitution compounds occur in water supplies was recognized by the Water Department and Board of Health officials of Milwaukee in 1918, as clearly described by Superintendent H. P. Bohmann.* In this instance phenol

waste from the city gas works, a by-product coke works, and a munitions plant—the latter 13 miles distant from the intake—polluted the waters of Lake Michigan under certain wind conditions and gave rise to pronouncedly disagreeable tastes in the city, following chlorination. The intensity of taste was found to depend not upon the amount of chlorine used for sterilization, but upon the amount of phenols present in the water. Other cities along the Great Lakes have had similar experience without realizing the specific cause, the taste being attributed solely to the sterilizing agent or vaguely to the effect of chlorine on “organic matter.” A number of cities in Wisconsin, Ohio, Indiana, Illinois, and Pennsylvania have had similar experiences to that of Milwaukee on account of phenol wastes.

Aside from the liability of taste and odor, the presence of phenols has another unfortunate effect on water supplies, namely, that of reducing or nullifying the efficiency of the chlorination process used as a safeguard against harmful bacteria. Numerous water purification works have discovered the inability to get satisfactory bacterial reduction except by using excessive doses of chlorine and accepting disagreeable taste in the supply.

The ordinary processes of water purification have not been successful in dealing with phenol wastes, but some recent experiments indicate the possibility of effecting a considerable removal before chlorination and thus reducing the probability of complaints from taste and the interference with chlorination noted above.

WOOD DISTILLATION WASTES

The wastes from the wood distillation industry have affected seriously a number of public water supplies. Most of the instances reported were from Pennsylvania and New York where destructive distillation of hard wood is carried out for obtaining charcoal, methanol, and

acetate of lime, although some troubles of this kind have been reported from resinous wood distillation plants in the Southern states. The troublesome wastes are from the spent still liquors and sludges, all of which have the penetrating odor and taste peculiar to wood creosote. These complex products differ chemically from the coal distillation products, though classified also as phenols. Their effect on water supplies is due directly to the physical properties of the original substances which give to the water a “smoky” taste when present in sufficient quantities. Unlike coal phenols, the tastes are little affected by chlorination processes used in water purification. If substitution products are formed with chlorine they are not markedly more penetrating than the original substances. No method of treatment by water purification plants has been found which is effective in removing the objectionable tastes and odors caused by these substances, though aëration is helpful.

OIL WELL OPERATIONS

The accidental spilling of crude oils into water supplies while rendering the stream unsightly in some instances has not greatly affected public water supplies. Some troubles have been reported at the slow sand filtration plant at Pittsburgh due to paraffins in the water, which incrustated the sand grains and interfered with the normal operation of the filters.

By far the most serious effect of oil operation is due to the discharge of salt water into streams. Pollution of water supplies by salt water has been the subject of litigation in several states. The salt pollution affects principally the taste and palatability of water. The amount of chlorides found objectionable is very variable in different localities. The writer has in mind an instance in Pennsylvania where the limiting amount of chlorides is about 200 p. p. m. expressed as chlorine, and again another instance in the Middle West, where 400 p. p. m. is not seriously

objected to. Some of the water supplies of Kansas and Oklahoma contain even higher amounts and are quite acceptable for general use.

In the two states named above, the problem of salt pollution is a very serious one. On account of the enormous oil development within recent years many of the streams have become so impregnated with salt as to be useless and some cities have been forced to seek other water supplies. In Oklahoma, particularly, not only the streams are affected, but the ground water as well, on account of the pollution of underground water by ineffectively plugged and abandoned oil wells. In addition to creating unpleasant taste, the presence of large amounts of salt in a water supply makes it less suitable for steam-making purposes and tends to aggravate "red water" troubles.

There is no practical remedy for salt water once introduced into public water supplies.

OIL REFINERY WASTES

Sludges and spent liquors from oil refineries have been a minor source of trouble in some water supplies, as for instance, a Missouri city reported within the last year. However, troubles from this source are not believed to be extensive.

Some of the Western States have had to deal recently with objectionable wastes, known as "feetings" due to washings from certain oil operations. These wastes have created disagreeable odors in several water supplies, abated by impounding the waste liquors and releasing during flood periods of the stream.

TANNERIES

The blackening of streams by tannery wastes is a familiar sight in those regions where the industry is profitable. The pollution occurs to such an extent in certain localities as to prevent the use of streams for public water supplies. Provided there is sufficient dilution the effects are not permanently noticeable and may be mitigated by ordinary processes

of filtration, although they may entail additional expense in operating water purification plants by reason of increased alum dose to secure coagulation, and may affect the transparency or color of water supplies taken from those streams.

PAPER INDUSTRIES

The pollution of streams by paper mills and allied industries has been the subject of much litigation in many states, resulting in drastic measures against the discharge of pulp, sulphite, liquors and other waste matters.

OTHER INDUSTRIES

The list of industries polluting water supplies by their trade wastes is too lengthy to be treated except by passing reference. The wastes from textile plants, bleacheries, dyeing establishments and particularly the woolen mills have been a source of much trouble, especially in the textile centers in the East. The refuse from soap manufacturing plants, dairies and creameries, from sugar mills, and from saw-mills have all had their influence on public water supplies.

The building up of the new American industry of dyes and organic chemicals is bringing to light some additional problems, as instanced by the recent case of a New Jersey city which sought legal relief from pollution of its water supply by benzaldehyde (artificial oil of bitter almonds) from a chemical plant.

REMEDIAL ASPECTS

It can hardly be denied that the prosperity of a nation is fairly measured by its industrial development. It is obvious, therefore, that the proper solution of the problems of industrial pollution does not lie in the forbidding of industry, but in a sane regulation whereby industries may flourish without detriment to development of the resources of the country. It is proper that the greater responsibility of preventing stream pollution should be placed on the industrial plants themselves. There has been too much carelessness by manufacturers in allowing ob-

noxious wastes to enter streams, and too much disregard of the rights of others, the public particularly, in the use of streams. The manufacturer can often with little expense prevent the pollution of streams, and repeatedly it has been found that the unwilling adoption of processes for waste disposal has resulted in a clear profit to the manufacturer from the recovery of by-products. On the other hand, instances are not lacking where the necessities of public water supply have sometimes borne down rather heavily upon the industries, when remedies were at hand for offsetting the effects complained of. It must be admitted that water purification plants are very much stereotyped in design and fitted only for handling the older and better known problems of removing sewage effects, turbidity and color; but it would be unwise to conclude therefrom that the art of water purification has reached its final limitations.

In these matters it would seem that the "rule of reason" might often be put into effect, although a spirit of leniency in certain deserved instances ought not to be construed to cover willful cases of pollution, carried out in

total disregard of the public interest. Regulating powers in the hands of the state health officers seem to offer the best solution of such cases, although there exists a remarkable lack of consistency in the various state laws governing such cases, with the result that one state exercising a prudent control over the pollution of its waters may find itself helpless to cure evils originating outside its jurisdiction, but having a controlling within its own boundaries. In one effect on the quality of water supplies stance, at least, the enabling act of the state health body specifically exempts from jurisdiction certain classes of offenders having considerable share in the deterioration of the water supplies. To some, the remedy for diversity of state laws and the lack of uniformity of their application would lie in Federal or district regulation. However, it is hard to conceive of a united public sentiment, in the near future, supporting general regulation, and on the other hand, it is easy to foresee many difficulties in the way of applying such laws to the varied conditions in the several states, the prosperity of which frequently hinge in large measure upon this or that principal industry.



TO TEACH MOTHERCRAFT

In England the opinion has been officially expressed that the grade teachers are quite competent to teach Mothercraft, but in this country with ideas of specialization some colleges have begun the training of special teachers.

Here is a group of young women at the University of California, who are preparing themselves to be leaders in the new lines of work. The nurse instructor is demonstrating and each student has materials with which to follow the directions with a practical trial.



MOTHERCRAFT INSTRUCTION FOR SCHOOL GIRLS

MAY BLISS DICKINSON, R. N.,
*Chairman, Mothercraft Committee,
Massachusetts Federation of Women's Clubs,
Boston, Mass.*

Read before Sessions on Child Hygiene, American Public Health Association, at San Francisco, Cal.,
September 16, 1920.

Mothercraft, now introduced into twenty-five states and several foreign countries, is a very recent development in public health education. It seeks to utilize the maternal instinct of young girls and build on it a knowledge of simple hygiene and sanitation. The child carries this instruction to the home and the standard of home health is raised.

THE invitation extended by the American Public Health Association to present Mothercraft, at this meeting, was particularly gratifying to the Mothercraft Committee which I represent as advisory member of the departments of public health and child welfare of the General Federation of Women's Clubs and chairman in the Massachusetts State Federation of Women's Clubs. Our members saw in the recognition which your body has extended, evidence of the growth of this movement to the present national and international proportions. Our message has already been proclaimed at two biennial conventions of the National Federation of Women's Clubs. I need not tell you what a pleasure it is to have this opportunity to say something about Mothercraft to this national gathering of health workers.

It is because of the early appreciation of the great and universal appeal of Mothercraft on the part of organizations like this that a movement which started as a small local undertaking has, within four years, become established in many American states, in the Dominion of Canada, and is finding its way into many other countries.

I realize that before going on, our term, "The Mothercraft Movement," ought to be defined. It should not be

confused with the Little Mothers' Movement, though in a way it is an outgrowth of that philanthropic work among the poor. The admirable system of teaching big sisters of the New York tenements to give the right care to their little brothers and sisters started something of inestimable value to all communities. This work long ago proved a great saving of babies' lives, especially in the critical summertime, and it pointed a way to a healthier, happier childhood. It might have been thought that only in congested slums was such a training necessary. Every physician and every health officer knows that the same ignorance is found in all classes of society. Many mothers themselves know it. Not long ago I saw a letter from a young woman who went overseas early in the war and married an Englishman. Writing back to her mother she said in effect: "Here I am, Mother, with three children and thousands of miles away from you, with no knowledge whatever of taking care of them. You spent thousands of dollars on my education and not one word was I ever taught about my duties as a future mother; although I find now that the very lives of my little ones depend upon my knowledge." The American mother who showed me this letter expressed the deepest regret that Mothercraft was not,

in her daughter's childhood, a part of the course in the expensive private schools to which she had sent her children.

A more fortunate family, though not so in material resources, was an Italian household whose members think that Mothercraft saved the life of the baby. The oldest daughter, twelve years old, who had had instruction in a Mothercraft class at the public school, took entire charge of the home, the mother and the little newcomer, except for the daily visits of the nurse. When the baby had a convulsion, little Carlina followed the instruction of the classroom giving immediate and correct care, and sent at once for the doctor, who said that probably she had saved the baby's life.

The specific character of the instruction in Mothercraft, which is applicable to the training of all girls in public and private schools, and after they have left school I should like to emphasize. The system is the outgrowth, as I have said, of the Little Mothers' Movement and of welfare work among young factory girls. Four years ago a graded course of twelve lessons in girls' health and the care of babies was prepared and was given with practical demonstrations before classes of girls of the seventh and eighth grades of several Massachusetts cities. This work was immediately successful and gained widespread attention throughout the country. The lessons were expanded into a text book, "Children Well and Happy." At the same time the State Federation of Women's Clubs, which had already done so much child welfare work, had become interested in this plan. A Mothercraft committee was formed and the importance of the work was held to be such that the eight district directors were given as associate workers in the Committee. For two years this Committee has followed the definite procedure of introducing Mothercraft into public and private schools and other groups, such as Girl Scouts, Camp Fire Girls, Americanization classes and playground associations.

The chief claim that can be specially made for the Mothercraft work which I am describing, is that it is precise and specific. All over the world the idea has been prevalent for some years past that girls should be properly prepared for motherhood; and sporadic efforts in this direction have been made in many places. As the work in Massachusetts gained publicity, letters of inquiry began to come in from every part of the map. In some cases the Mothercraft material was used to incorporate with other plans already started. In some schools the

PLATE I



Mothercraft utilizes the maternal instinct of young girls to interest them in hygiene and sanitation.—Copyright M. B. Dickinson.

scheme of instruction has been entirely rearranged to introduce the course in "Children Well and Happy." Mothercraft teaching has now been undertaken in 25 of the United States and it has been introduced into the Dominion of Canada under the auspices of the Victorian Order of Nurses, beginning at Winnipeg and the surrounding towns and extending into several provinces.

How this Mothercraft plan dovetails with the whole scheme of child welfare work is easily seen and will need but little exposition. As Dr. Truby King of Australia said: "Child welfare work is saving the lives of many babies and mothers, but it is not until we go back to the establishment of health in our girls of school age that we can ensure strong womanhood and better born babies." It

is precisely this problem with which Mothercraft deals.

The nature of the instruction that has been developed under this plan is here briefly indicated. Mothercraft should not be confused with sex hygiene or sex education. That form of instruction is left entirely to other agencies. Some educators do not believe that the mysteries of life should be taught to large groups of children; but we all agree that mothers should have special instructions in this direction so that they may teach their girls.

The course begins with an account of personal hygiene and the relation of a clean home to child life. This serves to create an interest in the girls' minds that leads them naturally into the subject of baby hygiene and the right care of the baby in the home. No reference is made to prenatal care. In the subsequent lessons the girls are given definite instructions with demonstrations, either with the Chase doll or the actual baby. They learn how to administer the first bath and each succeeding lesson touches upon important and familiar details of infant care through the first year.

It has been found that this study is easily introduced into the schools and elsewhere. The first step, as a rule, is to interest school officials. In some cases the use of the schoolroom has been granted after school hours until a place could be made for it in the regular school curriculum. School superintendents have very generally approved the plan. The question of who should give the instruction in Mothercraft is a vital one. In England, I note from a letter from the Senior Medical Officer, Ministry of Health, Whitehall, London, an opinion prevails there that the grade teacher should give the lessons. In this country it has been proposed that young college women receive instruction in this subject so as to prepare them to teach it. My personal feeling is, and it has been borne out by the success that we have

had wherever this plan has been tried, that the school nurse is the logical person to present this subject. She has had the general training that enables her to speak with authority and to use the right terms. It is objected that some school systems are without a nurse. The answer is that the introduction of Mothercraft will hasten the day when the school nurse will be universal.

PLATE II



The Mothercraft girl can test the baby's milk to see if it is cold.—Copyright M. B. Dickinson.

What is the future of Mothercraft?

We have to recognize that it is, so to speak, in its infancy. The growth up to this time is far from being proportionate to the need, and we should like to appeal to any who are interested in this presentation to give thought to ways by which organizations with which they are familiar may cooperate with us. As for the participation of the women's and parent-teacher associations which have

been responsible for so much child welfare work, I think we can say positively that that is assured.

No topic seemed to excite more general interest at the recent biennial convention at Des Moines than Mothercraft. As for other organizations, the anti-tuberculosis associations have already shown keen appreciation of the value of the Mothercraft plan as it relates to the health of mothers and children, and indeed of the whole family life. In Kentucky the State Tuberculosis Association has distributed Mothercraft material among the entire personnel of public health nurses, these being responsible for applying it to local conditions. Much further work in this direction could surely be done, for in consideration of the many millions that are spent yearly for the care and cure of tuberculosis no effort should be neglected, especially if it is inexpensive, that looks toward elimination of the disease. The seeds of most of the tuberculosis, we are told, are sown in infancy. When a little girl of twelve takes home the message that not only must the baby be clean, but the windows be open, flies kept out of the house, the milk kept clean and cold, and order introduced generally, a valuable beginning has been made toward the conditions under which tuberculosis cannot thrive.

As for the governmental agencies by which Mothercraft may be made a helpful part of the public health educational movement, our principal contact at present is with the state and local departments of education, some of which have found that this study fits naturally into the work of the home economic department, others into the department of hygiene; and with the Red Cross workers who see in it a means of meeting their urban and rural problems.

I have been impressed sometimes with a sense that the quest of health ought not to need to be so strenuous. If we all were privileged to live aright in a glorious climate like that in which we

are meeting, with its opportunities for being out of doors at all seasons of the year, how much of the teaching and preaching which we now undertake would be unnecessary? A world, however, of insanitary and congested homes, of ignorant parents, and of sickly babies, lies beyond the mountains and to it we must return after this convention, which to many of us has been of the nature of a marvelous holiday.

Since the above paper was read at San Francisco, another important agency for presentation of Mothercraft has been developed, through the preparation of a film entitled "Children Well and Happy." From this the illustrations of this article have been selected. This visual presentation, especially adapted to the requirements of groups of school girls, college girls, young mothers and Americanization classes, was prepared at Hollywood, under the personal supervision of Miss Dickinson. Through succession of beautiful pictures runs a story that is wholly charming, and in which the scientific and health lessons are clearly presented. The scenario, as originally written by Miss Dickinson, was adapted for the screen by Cecil G. Mumford, a well-known English literary man, who showed extraordinary imaginative capacity in bringing out the beautiful significance of Mothercraft. In the cast is William H. Crane, known to all playgoers, who, through his great interest in the movement and love of children, generously offered his services. The unusual photography of the film, including the prints, was due to the skill and interest of Max Dupont.

Appropriate music to fit each scene is being prepared by the Music Department of the Massachusetts State Federation of Women's Clubs, Mrs. Arthur H. Davison, Chairman, with the endorsement of the Music Department of the General Federation.

LACTOSE BROTH FOR ISOLATING BACTERIUM COLI FROM WATER

ESTHER A. WAGNER,
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and W. F. MONFORT,
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Read before Laboratory Section, American Public Health Association, at San Francisco, Cal.,
September 13, 1920.

These authors suggest simplification of the technic by reducing the lactose content by addition of gentian violet, also Pasteurization in place of autoclaving. The announced value of gentian violet for preliminary enrichment of colon cultures is sustained, with cleaner plates and readier identification of colonies. Gentian violet has also advantages in ensuring keeping qualities in the broth.

THE lactose broth prescribed by the committee of the American Public Health Association (1917) contains 0.3% beef extract, 0.5% peptone, and 1% lactose. It is adjusted to neutral reaction with phenolphthalein and sterilized in the autoclav at 15 pounds for 15 minutes. "Any type of fermentation tube may be used provided it holds at least four times as much medium as the amount of water to be tested." (The later directions of the committee (1920), issued since the completion of the work herein described, reduce the amount of lactose to 0.5%.)

The modifications suggested in this paper are: elimination of beef extract, reduction of the per cent of lactose, sterilization without autoclaving, and reduction of the volume of broth used in fermentation tests on 10 cc. portions of water tested.

Beef extract occasions certain difficulties in the preparation of neutral broth. It undergoes progressive hydrolysis with successive heatings. Anthony and Eckroth¹ found that beef extract adjusted to neutrality and thereafter subjected to sterilization in the autoclav was slightly hydrolyzed; with meat infusions the point at which no further

acidity was produced was not reached even after prolonged autoclaving. Chamot and Sherwood² advocated the use of media of special composition, omitting the usual addition of beef extract and increasing the percentage of peptone. It was their conclusion that beef extract stimulated growth of *Bact. communis*, but not in proportion to the trouble and labor involved. Salter³ showed that *Bact. communis* in peptone water (without sugars) reached the maximum rate of growth more quickly in concentrated peptone water; a 2% peptone solution appeared to be superior to broth with 0.3% beef extract and 0.5% peptone. Bronfenbrenner and Schlesinger⁴ concluded that in lactose broth the amount of gas produced increased directly with the concentration of buffer.

Concerning lactose Theobald Smith⁵ stated that a concentration of 1% glucose or lactose would be a decided detriment to *Bact. coli* and soon lead to its destruction. He advocated addition of a minimum essential concentration of sugar (glucose) of 0.1% to bouillon. Berman and Rettger⁶ found that *Bact. coli* failed to attack peptone appreciably in the presence of utilizable sugars, and

that the organism was unable to utilize completely 0.5% in a period of four weeks, while 0.2% was entirely used up in three days. Burling and Levine⁷ observed that *Bact. coli* dies off rapidly in a medium containing 1% of either lactose or glucose and considered it desirable that the concentration of lactose in preliminary enrichment media be reduced to 0.5%, which they considered sufficient for the purpose. This suggestion has been lately given official recognition.

Hydrolysis of sugar broths during sterilization was reviewed by Gorham⁸, who cited the observations of Hiss⁹, Norris and Pappenheimer¹⁰, and Elser and Huntoon¹¹, emphasizing the importance of efficient sterilization on account of the difficulty in obtaining sugars free from spores. Mudge¹² found that the degree of hydrolysis of lactose caused by sterilizing, as determined by fermentation tests, increased with the period of heating under 15 pounds pressure. Hasseltine¹³ confirmed this source of error and recommended separate autoclaving of bouillon in bulk with addition of lactose (20% solution in distilled water sterilized in an Arnold for an hour and one-half) to make a 1% solution.

The elimination of sporeformers, which occur in sugars quite commonly, is not of course assured by the latter method. There are furthermore commonly found in beef extract and in peptone very resistant sporeformers. Some of the common laboratory infections, as noted by Lawrence and Ford¹⁴, survive 15 pounds pressure for 15 minutes and are destroyed at 20 to 22 pounds. Another method of attack is proposed in the following experiments, wherein the selective action of gentian violet is invoked.

Churchman¹⁵ noted the bacteriostatic action of gentian violet, which resulted in more or less complete inhibition of Gram positive organisms. Krumwiede and Pratt¹⁶ reported that several green dyes restrained the growth of Gram posi-

tive bacteria but had no effect upon the Gram negative group. Kligler¹⁷ found the most marked selective effect manifested by the triphenyl methane dyes and noted that *Bact. aërogenes* possessed a higher resistance to these substances than *Bact. coli*. Hall and Ellefsen^{18, 19} tested the use of gentian violet in various concentrations in lactose broth and recommended the use of 1 part in 20,000. They report some inhibition of *Bact. coli communis*; but there is a possibility that the use of 1% lactose in the broth was a factor in the apparent inhibition. The suggestion lies at hand that sterilization of sugar broths for the isolation of members of the colon-aërogenes group may be effected by addition of gentian violet to filtered broth, with or without beef extract, containing 0.5% or less of lactose, and the application of heat reduced to that of Pasteurization or such brief heating as is involved in removing air from fermentation tubes in which the broth is placed for use. With properly selected inverted tubes (of 4 mm. to 6 mm. inside diameter) this last heating requires not more than 15 minutes in the Arnold sterilizer.

Lactose broth of the usual concentration is so applied in practice that varying concentrations of the components are present in the usual dilutions with portions of water incubated in fermentation tubes. According to the Committee's directions broth for dilutions of 1 cc. or less is tubed in 10 cc. quantities, while that for 10 cc. portions of water is in 40 cc. quantities. This leads to the final concentrations shown in table 1.

TABLE 1.

Concentration of Components of Lactose Broth as Incubated in Fermentation Tubes.

	Broth as Prepared		10 cc. 1 cc.	40 cc. 10 cc. Water
Beef extract	0.3	0.273	0.24	percent
Peptone	0.5	0.454	0.40	percent
Lactose	1.0	0.909	0.80	percent

If it were considered essential that the concentration of the components be constant throughout the series of dilutions tested, the content of the fermentation tubes as prepared for incubation of 1 cc.

portions or less might be made up to 12.5 cc. by adding sterile water; this might also be the procedure with inoculated broth tubes which receive but a loopful or a minute portion of a culture from an agar slant, or a broth of lower concentration might be used for portions of 1 cc. or less of water to be tested and for such inoculations.

If the suggestion of Smith be accepted, that 0.1% sugar is an essential minimum and 1% lactose is detrimental, the proper concentration lies within these limits. If the observations of Berman and Rettger are considered valid, 0.2% lactose requires approximately three days for its utilization while 0.5% of Burling and Levine is excessive. The quantities of peptone and beef extract necessary are those required for buffer action and stimulation of growth.

The reaction, adjusted to neutrality prior to autoclaving, is greatly modified by the alkalinity of natural waters tested; the pH values 6.6 to 7.4 rarely prevail in fermentation tubes as incubated.

0.3 PER CENT BEEF EXTRACT, 0.5 PER CENT PEPTONE, 0.2 PER CENT LACTOSE WITH 0.005 PER CENT GENTIAN VIOLET

Water from a well in Urbana, Ill., was put up in Durham tubes. The broths used were prepared by autoclaving the peptone-beef extract bouillon in bulk, to which was added dry lactose immediately before distributing it into the tubes, which were then heated for 15 minutes in an Arnold sterilizer. The concentrations used and the volume tubed were:

Standard broth containing 1% lactose.

A) 40 cc. broth.

B) 10 cc. broth.

C) 10 cc. broth with 0.005% gentian violet.

Broth containing 0.3% beef extract, 0.5% Difco peptone and 0.2% lactose.

D) 10 cc. broth.

E) 10 cc. broth with 0.005% gentian violet

To each tube was added 10 cc. water serially throughout the entire range of broths to insure as nearly as possible uniformity of bacterial content in the portions planted. Twenty-five tubes of each volume and concentration were planted on four days, making a total of 100 tests on each of the series. Transfers to Endo plates were made after 48 hours, and characteristic colonies picked for confirmation of lactose fermentation and methyl red reaction. Inasmuch as the consensus of opinion (Darling²⁰) is that only typical *Bact. coli* is to be regarded as indicative of fecal pollution, we have regarded these data—characteristic colonies on Endo's medium, fermentation of lactose broth and positive methyl red reaction—as essential, and have made ready recognition of colonies on Endo plates which yielded confirmation tests—the criteria of success.

The results shown in Table 2 indicate higher confirmations with added gentian violet than without: Standard 1% broth used in the approved way (A) yielded 89 tubes showing gas, characteristic colonies on 28 Endo plates, from which 23 were confirmed; (B) 90 tubes showing gas, 19 confirmations in lactose and 20 in methyl red broth; (C) 86 instances of gas formation, with 48 characteristic Endo plates, 47 confirmations in lactose and 48 methyl red positive reactions;

TABLE 2.

Comparison of 100 Tests on the Same Water with Broths of Varying Composition.

	A		B		C*		D		E*	
	Beef Extract 0.3 percent		Difco Peptone 0.5 percent		Lactose 1.0 percent		0.3 percent		0.5 percent	
	0.2 percent									
	Broth		Broth		Broth		Broth		Broth	
	Water		Water		Water		Water		Water	
	40 cc.	10 cc.	40 cc.	10 cc.	40 cc.	10 cc.	40 cc.	10 cc.	40 cc.	10 cc.
Gas in 48 hours.....	89+11—	90+10—	86+14—	85+15—	79+21—					
Characteristic Endo colonies.....	28+61—	25+65—	48+38—	16+69—	47+32—					
Confirmations in Lactose broth.....	23+5—	19+6—	47+1—	14+2—	47+0—					
Methyl red.....	23+5—	20+5—	48+0—	14+2—	47+0—					

*With 1:20,000 gentian violet.

(D) 85 cases of gas formation, 16 well characterized Endo plates, with but 14 confirmations in lactose and methyl red reaction; and (E) 79 instances of gas formation, with 47 confirmations in lactose and methyl red reaction.

Any inhibition which may have been caused by the high concentration of gentian violet used is more than counter-balanced by the sparing of sugar and of nutrients by the dye.

STERILIZATION WITHOUT AUTOCLAVING

To determine the minimum concentration of gentian violet which would inhibit growth of Gram positive organisms in broth, especially those occurring in peptone and lactose, a broth containing 2% peptone and 0.2% lactose was prepared without sterilization and put up in 100 cc. lots with the addition of 1) 0.01 mgm., 2) 0.02 mgm., 3) 0.1 mgm., 4) 0.2 mgm., 5) 0.25 mgm., 6) 0.33 mgm., 7) 0.5 mgm., and 8) 1 mgm. gentian violet per 100 cc. These were plugged with cotton, Pasteurized (70 to 80° C. for 15 minutes) and then sealed with paraffin. Kept at room temperature, distinct growth and bubbles on the surface developed in the first three bottles within four days; after a week the fourth showed growth, and shortly thereafter the fifth became cloudy. The last three, Nos. 6 to 8 inclusive, remained clear and sterile. A concentration of 0.33 mgm. per 100 cc. (1 : 300,000) served to inhibit to such extent that Pasteurization replaced autoclaving in the preparation of lactose broth. With less concentrations of the dyestuff, represented by Nos. 1 to 5 inclusive, the color was discharged or taken up by growing organisms, which ultimately formed a heavy white growth such as is described by Gorham and by Lawrence and Ford.

2 PER CENT PEPTONE, 0.2 PER CENT LACTOSE, 0.001 PER CENT GENTIAN VIOLET

In a 2% peptone, 0.2% lactose broth with added gentian violet ranging from 1 : 10,000,000 to 1 : 100,000, correspond-

ing to Nos. 1 to 8, a culture of *Bact. communis* (Parke, Davis) gave vigorous fermentation, although it repeatedly failed to ferment the standard 1% lactose broth.

In Table 3 are recorded representative results of tests upon water samples from various Illinois sources, using the standard 1% lactose broth (A) according to the directions of the committee of the American Public Health Association (1917); (B) with equal volumes of broth and water; (C) the 2% peptone, 0.2% lactose, with 1 : 100,000 gentian violet. In no case has the latter broth given fewer confirmations than the 1% broth however used. The experimental broth had a pH value of 7 to 7.4 before addition of gentian violet. Inhibition of gas formers other than of the colon group was not always complete: in two instances gas formation in gentian violet broth was not followed by characteristic Endo colonies.

TABLE 3.

Comparison of Results with Various Concentrations of Components in Preliminary Enrichment Broths. (Volume of water planted in each case 10 cc.)

Concentration of Components in Fermentation Tubes.				
Beef extract....	0.24	0.15	0.0	percent
Difco peptone....	0.40	0.25	2.0	percent
Lactose	0.80	0.50	0.1	percent
Gentian violet...	0.00	0.00	0.0005	percent
No. 1.....	3 in 5	2 in 3	3 in 3	
No. 2.....	2 in 2	1 in 3	1 in 3	
No. 3.....	1 in 2	3 in 3	3 in 3	
No. 4.....	1 in 2	2 in 3	1 in 4	
No. 5.....	2 in 2	2 in 3	2 in 3	
No. 6.....	2 in 2	2 in 3	1 in 3	
No. 7.....	1 in 2	2 in 3	2 in 3	
No. 8.....	1 in 2	2 in 3	2 in 3	
No. 9.....	0 in 2	1 in 3	0 in 3	
No. 10.....	1 in 2	1 in 3	3 in 3	
No. 11.....	1 in 2	1 in 2	2 in 3	
Gas formed in 48 hours	25	32	34	
Lactose fermented	15	19	21	
Methyl red positive		19	20	
Methyl red negative		0	2	

DISCUSSION OF RESULTS

The advantages of gentian violet in lactose broth for preliminary enrichment of colon cultures set forth by Hall and Ellefsen are sustained by our experiments: there is some inhibition of non-colon gasformers, which conserves the available lactose for its intended use, and leads to cleaner Endo plates, with much

more ready recognition of characteristic colonies. Its use in lactose broth, permitting the elimination of the autoclav and the resulting hydrolysis of the sugar, seems to afford a means of securing a broth of good keeping quality, free from spores. The amount we have used in practice is three times that which seems necessary to prevent growth of intrusive forms in Pasteurized broth.

How serious may be the inhibition of *Bact. coli* by the amount of gentian violet used is not yet determined; but the comparative results above presented indicate a net increase in the number of confirmations of lactose-fermenting, methyl red positive, non-sporeforming bacilli of the group over that discovered by the use of the standard procedure with the standard broth. The number of confirmations is slightly greater than when 1% lactose is used with an equal volume of sample, a procedure which gives a lactose concentration in the diluted content of the fermentation tubes almost equal to that which will occur when 40 cc. of a 0.5% lactose broth is used according to the old prescription for 10 cc. portions.

We have purposely reduced the concentration of lactose to the minimum: it may prove that 0.1% is insufficient for the growth of some organisms of the colon group. Of this we have encountered no instance as yet. Thus far it appears that this very small per cent of lactose with a proper amount of peptone is sufficient to yield perceptible volumes of gas in Smith or Durham tubes. We have used a large amount of peptone to shorten the lag period, in the hope of ultimately shortening the period of incubation of the preliminary enrichment culture to 24 hours, a procedure recommended by Burton and Rettger²¹ to preclude development of gas by *Bact. cloacæ*.

Our results show no advantage in adhering to the use of four times as much medium as the volume of water to be tested, whether 1% lactose or 0.5% lac-

tose is used; while the use of gentian violet with either 1% or 0.2% lactose gives apparently a much more sensitive medium.

SUMMARY

Preparation of lactose broth for preliminary enrichment in water may be simplified by reducing the lactose content to 0.2%, with addition of gentian violet (0.001 to 0.00033%) and Pasteurization in lieu of autoclaving, by which procedure hydrolysis of the sugar is obviated.

Beef extract may be eliminated if sufficient peptone be substituted.

A broth containing 2% peptone, 0.2% lactose and 0.001% gentian violet, when used with an equal volume of water, gives results superior to those obtained by using the standard 1% or 0.5% lactose broth according to the prescription of "four times as much medium as the amount of water to be tested."

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THE HOSPITAL BETTERMENT MOVEMENT IN CALIFORNIA

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Hospitals have not progressed as rapidly as other branches of medicine and many do not meet even minimum requirements. In California the Public Health League seeks to better this condition. Its survey shows that faults exist in location, fitness for purpose, organization and financing. The writer believes better hospitals to be the greatest health need of the day.

INTEREST in better public health, better medicine and better hospitals now constitutes a progressive, nation-wide movement, made up of many interests, including physicians, public health officials, educators and the general public. Organized effort is of many varieties, including scientific, educational, commercial and political.

Out of the discussion, certain fundamental facts, definitions and ideas are crystallizing. The most important of these is the fact that health, interpreted in its broader sense, is a public utility, a most important public utility; its quality depending as much upon successful organization and management as depends the quality of any other public utility upon similar methods. It is recognition of this principle that is leading insurance companies and industrial plants to appro-

priate constantly increasing sums for medical and public health departments as investments. Governments are incorporating it into laws, accident laws, medical aid acts, and public health measures, some of which are sound, some indifferent and others dangerous. They are mostly leading toward socialization of medicine and public health and therefore are matters of vital interest and concern to physicians and hospitals, not only as to the advisability of socialization under any conditions, but as to leadership in organization and management. As the movement is now developing, its policies, management and control are passing more and more into the hands of governments, commercial and lay organizations, and out of the hands of physicians.

It would seem rational to consider that

permanent progress in health is as dependent upon trained medical leadership as banking progress is dependent upon bankers for leaders, the courts upon lawyers or the farms upon farmers. Actually, medical leadership is not the dominating type at present and does not appear to be gaining as rapidly as the unfolding of the situation requires. Medical and health education is being improved and medical activities are expanding more and more into collateral lines. Full-time educated health officers are in demand and health laws are being strengthened. Nursing is becoming a many-specialty profession, turning out through its good schools trained technical assistants to the physicians of curative and preventive medicine. The practice of both therapeutics and prevention is broadening its scope to include mental and social ills. Hospitals and other agencies are being improved, the variety of public services amplified and strengthened.

Medical economics, or the business of medicine, is beginning to attract well-trained physicians, whose work is being strengthened by organized interest in this until recently undeveloped specialty. Of these organizations, the League for the Conservation of Public Health of California is the best example. This League, initiated and carried to success by medical and public health men and women of California, fills as no other organization has done one of the most important, and surely the most neglected field, in a sound health program. Its policies and organization are rapidly extending into other states, and the movement already has the nucleus of a national institution.

In addition to its numerous other activities, the League, through its Section on the Advancement of Medical Education and Science, assumes leadership in the Better Hospital Movement in California.

HOSPITAL STANDARDIZATION

Although the oldest of all medical institutions, hospitals have not progressed

as rapidly as other branches of medicine and a considerable percentage of them do not meet the minimum requirements for good service. During recent years there has been a growing recognition of this fact and an ever increasing demand for improvement, out of which have developed a number of national, state and local organizations dealing with the subject. These include the American Medical Association's Section on Medical Education and Hospitals; the American College of Surgeons; the American Hospital Association, and some twelve other national bodies.

In order to secure coöperation and concerted action between these organizations interested in various phases of the subject, there has been created a Council on Hospital Service, made up of delegates from the important associations.

THE MOVEMENT IN CALIFORNIA

The League for the Conservation of Public Health of California early adopted hospital improvement and service as one of its major activities and is diligently attacking the problem under a policy which contemplates:

(a) The establishment and maintenance of the closest possible coöperation with all other national, state and local organizations interested in the problem as a whole or in any phase of it.

(b) A survey of the hospitals of California, the survey to be made by personal examination in conference with local hospital authorities, and to include every phase of hospital plant, organization, finances and activities.

(c) The establishment and maintenance of a hospital survey bureau, planned to help local hospitals with any problem, whether of construction, alteration, personnel organization or operation as a whole or of any department.

(d) The establishment and maintenance of a complete index record of all hospitals, to include not only the original survey, but all additional records and correspondence, and to make these rec-

ords of assistance to other organizations entitled to them.

(e) The bringing together as institutional members of the League all hospitals of sufficient importance and honesty of purpose as to justify efforts in their behalf; and the development through this organization of a constantly broadening conception of the duties and privileges of hospitals and their influence for good in community life.

This program has been in operation for about a year and the results have been surprisingly gratifying. Hospitals everywhere have welcomed the Committee and calls for further conferences have been elicited from most of the institutions. In fact, requests for conferences and advice from all parts of the state have grown so numerous that the Committee has been unable to answer all of them.

As a first step in its work, the League undertook to establish coöperative relations with other agencies interested in better hospitals, better medicine and better public health. Such coöperation was not difficult to secure. A number of important bodies have delegated to the League this function of their California program. The Section on the Advancement of Medical Education and Science, either through the dual function of one or another of its members, by delegation of function or by coöperative understanding, is working in harmony with the two university medical schools and hospital departments, the State Medical Society, the constituted health bodies of the state, and the Council on Medical Education and Hospitals of the American Medical Association.

About 450 institutions in the State are listed as hospitals. About one-third of these are practically expanded physicians' offices or are modified residences with a few beds, and hardly come within the scope of public utilities.

About 100 hospitals have been visited by the Committee, some of them several times. The rest will be visited during the

coming year. The hospitals are of every conceivable class, in physical plant, policies, finances, organization and management. Some of them are complete enough to meet the demands of modern medicine in a creditable manner. More are incomplete in many respects, and some are not a particular credit to the physicians or communities in which they are located. Practically all of them want to be better, and in only two places was the Committee met with anything but a spirit of coöperation and a desire to do better work.

Early in its work the Committee found it necessary to have an examination outline. A survey form was worked out covering all phases of a complete general hospital for all intramural and extramural activities, including contact with other organizations interested in better health. This form has been printed and is in constant use.

It also was found necessary to have a working definition of what constitutes an acceptable hospital. In discussing this subject in a former article it was stated that:

"The minimum requirements for a modern hospital are that it shall be located, constructed, equipped, organized, financed and personneled to supply all the facilities and render all the complex services required by modern medicine, including physical, social and mental ills; and at the same time to furnish the facilities for training new workers in all the special fields covered by its activities.

"The modern hospital is a great public utility, the combined school and workshop of modern medicine; a community health center in all that the name implies.

"As a workshop, it uses the most precious material, employs the greatest variety of implements; and calls for the services of master craftsmen of many specialties. The hazards are great; every day is 24 hours long and service must be as free from error as possible.

"Love of service—practical everyday idealism—must be the constant watchword in every hospital, and dividends paid in soul satisfaction must be prized as of great wealth."

The committee has seen some splendid hospitals, many that are fairly good, some that are indifferent, and a few that ought not to be allowed to exist. We found many situations that were discouraging, but optimism has been sustained by an all but universal interest and desire for progress by hospital authorities everywhere.

The problems and shortcomings are infinite in variety. They include mistakes in location, construction, financing, organization, management, operation and too frequently in conception and understanding of duties and responsibilities. It is not possible in the time allotted to this paper to do more than sketch a few of the most serious difficulties:

Staff Organization—A loosely selected staff, holding infrequent meetings, constitutes a most unsatisfactory and dangerous situation in many hospitals. Frequently these so-called "open staff" hospitals are in reality "hotels for the sick" where both the physician and the patient are guests, with no interest, responsibility or concern in the success or failure of the institution. Hospital staff members should be selected with care, appointed with dignity and treated as responsible officers. Good results demand mutual interest, responsibility and team work between members of the staff, as well as between the staff and the management. There must be mutual understanding that records will be kept, unnecessary surgery avoided, accidents and other hazards reduced to a minimum; X-ray and other diagnostic methods used to their greatest advantage; nurses better instructed; idealism and education fostered in every possible way; and the sympathetic care of the sick insured.

Organization and Management.—Analysis of our survey shows great vari-

ety in organization and management, some of it splendid, but in quite a large percentage of hospitals the organization is faulty and the management sometimes in the hands of persons not sufficiently trained or experienced to carry on the work as it should be. There is no reason why the basic principles of good business organization should not be applied to hospitals. These consist in a board of directors, which should not exceed nine or eleven in number, and an administrative officer-manager, director or what not—who is the mouthpiece of the directors in all matters. He should be entirely responsible to the board for every phase of management, including the entire personnel. Boards of directors should concern themselves with questions of policy and consideration of such other matters as are brought to their attention by the executive. Large boards, with numerous overlapping committees engaged in managerial matters, should be avoided.

Did time permit, it would be interesting to discuss finances, records, clinics, contact with other organizations; organization and management of X-ray laboratory and other public utility departments; dietetics; laundry; purchasing; teaching functions; nursing; and many other questions of great importance, and upon which the Committee's statistics are enlightening.

In conclusion, I would like to repeat that the hospital improvement movement has not kept pace with the advances in other branches of medicine and public health. It started late and must be speeded up or medical and health progress will slow down. Hospitals must be better located, better designed, better financed, better organized and better managed, with a broader educational and public service vision. This is by far the most important question before the medical and public health professions, and there is no more important question before the general public.

SYMPOSIUM ON THE HEALTH CENTER

I. THE HISTORICAL DEVELOPMENT

THE health center movement in this country is now about ten years old.

The term "health center" had been used in England before that time but was applied only to infant welfare stations. In its early development in this country the health center idea evolved from the dispensary. It marked a distinct advance in public health work in that it applied the dispensary idea to a population group. In other words, instead of caring only for those who came for treatment, it reached out into a definite area and gave intensive health service to all those whom its resources permitted it to handle. This service included preventive, as well as curative medicine, and was taken to the homes of the people.

This idea of giving health to a definite population unit instead of making the people come after it, was first applied by Dr. W. C. White in Pittsburgh a little more than a decade ago. The scheme underwent various vicissitudes, however, and lasted only six months. A contemporaneous plan was attempted in Milwaukee, where child welfare work was instituted in a definite district by Mr. Wilbur C. Phillips. This project was upset by a change in political administration, but later (1917) Mr. Phillips developed a similar plan in the Cincinnati Social Unit. In 1913 the New York Milk Committee established its Health Center in the Syrian district in lower west Manhattan. Two years later Dr. S. S. Goldwater, Health Officer of New York initiated a comprehensive plan for a health center on lower east Manhattan, and some time after Health Unit No. 2 was established in Queens.

The Department of Health of Buffalo inaugurated health work in July, 1914, which developed into health centers soon after. In 1915 Cleveland started health center work in a district of 100,000. About the same time Philadelphia carried

on infant welfare work through health centers. In Boston, the Maverick Dispensary performed health center work, though it did not denominate itself as such.

By the year 1917, it is estimated that there were about a dozen health centers in this country. A notable fact is that practically all of these were in the large cities. One exception was Norwood, Massachusetts, a town of about 12,000, which maintained a health center as part of its civic center. The real growth of the health center movement began in 1919. In New York state a number of communities established buildings where clinical services were offered, generally under the auspices of the local health department. The attempt to serve special population groups was not always adhered to, however, and now the term "health center" began to mean a headquarters from which public health clinical work was carried on.

In September, 1919, the American Red Cross, which had previously announced that the central feature of its peace time program was to be in the field of public health, issued a pamphlet entitled, "Health Centers, A Field for Red Cross Activity." In this pamphlet the health center was described as the physical headquarters of the coördinated health work of the community. At the end of the year 1919, 49 communities had health centers and 28 more were proposed. Seven communities had more than one health center, such as Cleveland with seven, Philadelphia with eight, Buffalo with five. The total number of health centers was 72. Instead of being entirely in the large cities, they were in places of all sizes, though particularly in communities of 10,000 to 25,000 population and in cities of more than 100,000 inhabitants.

The expansion of the health center movement has been most marked during

the year 1920. The term has become popular and much has been written on the subject. The American Red Cross recently prepared a bibliography on health centers and in it listed about 100 articles. Of these 50 appeared during 1920. In September, 1920, a pamphlet entitled "The American Red Cross Health Center" was issued by that organization. This type of health center is largely an educational and informational institution designed to meet with the most practical devices those public health functions which are too often lacking in a community. This pamphlet was reviewed in the December, 1920, issue of the JOURNAL.

On December 31, 1920 there were 385 actual health centers in operation in various parts of the United States. The Red Cross was concerned in the administration of all but 60 of these. In one year, therefore, the number has increased five fold. The modern conception of the health center is that it is an institution from which health influences

radiate, a place where people may come to learn how to keep well, the physical expression of creative health effort. Notable examples of present health centers are New Haven, Connecticut; Alameda County, Cal.; Green Bay, Wis., and Knoxville, Tenn. As a practical method of selling health, the development of health centers is the next step in modern preventive medicine.

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(J. A. T.)



Dental Stigmata in the Diagnosis of Obscure Congenital Lues. — Many children from the ages of six years to the age of puberty, come to the clinic with obscure symptoms which are hard to account for. It seems that typical dental stigmata have not been given the attention they deserve as diagnostic points. The classical Hutchinson tooth is by no means the only form of characteristic tooth in congenital lues. In addition to it there have been many dental abnormalities associated. Cavallaro of Florence, Italy, in 1908-09, described horizontal grooves on the teeth, dental infantilism, cup-shaped erosions on deciduous molars, and cuspal atrophy of the first permanent molars

as being significant, diagnostically. In 1917, Roberts, of New York, added to Cavallaro's list, the abnormal spacing of the upper central incisors of the second set, which incisors are somewhat long and cylindrical. In the same year Sabourand of Paris asserted that a mamillary eminence or accessory cusp on the lingual side of the first upper permanent molar is even alone sufficient guarantee of the existence of hereditary syphilis. While it is true that these stigmata occur in children who are apparently healthy, nevertheless, in every instance their presence is at least suggestive of congenital lues.—William Henry Donnelly, M. D., *Long Island Med. Jour.*, XIV—10, Oct., 1920. (A. N. T.)

SYMPOSIUM ON THE HEALTH CENTER

II. WHAT NEW YORK STATE HAS DONE IN HEALTH CENTERS

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PROBABLY the first step toward the creation of health centers in New York state was that taken by the city of Buffalo in March, 1916, when five district health centers were established. In the summer of 1918 a health center was organized in Oswego on the initiative of Dr. E. J. Marsh, health officer, Dr. C. R. Hervey, sanitary supervisor of the district in which that city is located, and Dr. Chas. C. Duryee of the State Department of Health. The wisdom and value of this step could have had no greater demonstration than that which was given a few months later when the influenza epidemic struck that city. Probably no other municipality of its size in the state suffered as severely from the infection, for it is estimated that at the height of the outbreak more than one-half the population of about 25,000 were sick with the disease. Since nearly 50 percent of the physicians were in military service or incapacitated for active work the situation was serious, but with the Health Center organized and functioning, emergency measures were immediately put into action. Within a few hours day and night telephone and ambulance service was established, medicines and other supplies were furnished, and medical and nursing services supplied by the N. Y. State Department of Health, the U. S. Army and U. S. Public Health Service, and all were made instantly available through the Health Center as a headquarters. Thus, through the application of system and coördinated effort made possible by the centralized facilities and equipment of the Health Center, adequate relief was obtained which

would have been impossible under any other method.

Subsequent to and perhaps largely as a result of the need for coördination of health activities indicated by the epidemic, health centers were established in Binghamton, Dunkirk, Schenectady and other municipalities, the object in each case being to bring under one roof all of the various health activities, thus saving the time and energy of the health officials as well as materially reducing the overhead expense of each agency.

Following the establishment of health centers in the communities mentioned, similar centers have been organized in 30 or more communities in the state under either municipal or Red Cross supervision. With one exception these are in cities or towns of more than 5,000 population. While undoubtedly of some advantage to nearby country districts, they have had comparatively little effect on the rural health problem of the state.

Beginning at the time of the influenza epidemic there has been a steady demand from some of the smaller communities of the state for aid in securing medical service. Some of the calls have been from places where a physician was already located but where through illness, age, or other causes it was impossible for him to care adequately for all those who needed his services. Other calls have come from communities absolutely without medical service except such as can be obtained occasionally from distant neighboring towns in good weather when the roads are open. In cold weather when the roads are closed it is often impossible to obtain the services of a

physician even for very serious cases. By means of advertisements in medical journals and news notes in the department's publications it has been possible to

aid approximately half of the 82 communities requesting medical service in securing a resident physician.

That medical service in the rural com-



PUBLIC HEALTH CENTRE BUILDING—NEW YORK STATE DEPARTMENT OF HEALTH—HERMANN M. BIGGS M.D., COMMISSIONER.
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munities of New York state is tending to decrease rather than increase is indicated by a survey made of a number of counties with large rural populations. In these sections it has been shown that the number of physicians is actually growing less and that the average age of those in active practice is increasing, those in practice more than 25 years predominating.

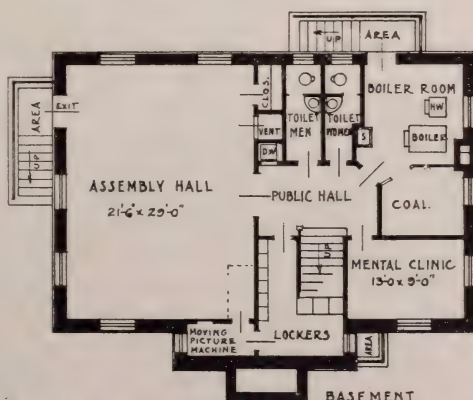
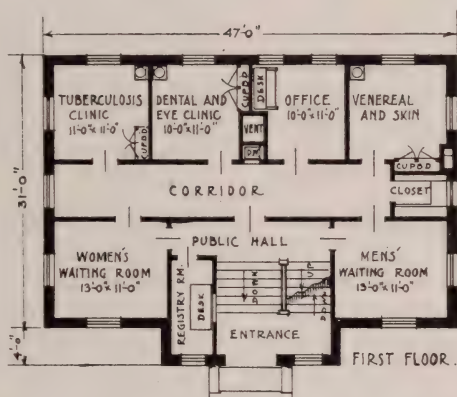
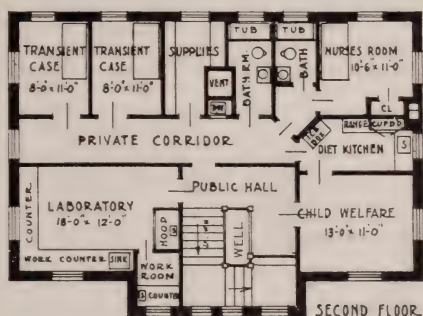
For the purpose of providing a means by which the same laboratory and other diagnostic facilities, together with hospital and expert consultation service, as is found in the larger cities, might be made available to the rural sections a health center bill was carefully prepared by the Public Health Council and introduced into the 1920 Legislature by Mr. Sage, chairman of the Senate Finance committee, and Mr. Machold, chairman of the Ways and Means committee of the Assembly. Briefly outlined, the bill provided that the supervisors of any county with the approval of the state commissioner of health should have the power to establish such county or part thereof exclusive of the cities therein as a health district which would be under the jurisdiction of a health officer, existing health officers in the district automatically becoming deputy health officers. The supervisors of such county were given the power to establish a health center in the district and to furnish laboratories, hospital facilities and expert consultation and clinic service. It was especially provided that patients sent to the health center should remain under the general care and oversight of their attending physicians. The bill was permissive and not mandatory in any of its details and also provided for the adoption independently of any one or more parts of the services mentioned. One-half of the cost and equipment of each of such health centers was to be met by the state provided that such sums should not exceed \$750 per bed and the number of beds should not be greater than one for each 500 of population. Free patients were provided for.

The Health Center bill failed of passage in the 1920 Legislature partly on account of its being introduced too late in the session for it to receive adequate consideration. It achieved, however, an important object, namely, the arousing of interest in the subject and a fairly comprehensive discussion of its features.

It is probable that a similar bill with a number of amendments will be introduced into the present Legislature.

Health Centers in New York state have been the subject of a number of news notes in the JOURNAL at different times, some of which have been illustrated. So far as the State Department of Health itself is concerned, it has published a good deal of information with reference to the establishment of local centers, and in its issue of the *Health News* for February, 1919, it devoted the greater part of the space to Health Centers, giving half a dozen different articles, one of them a discussion of the Health Center plan of Philadelphia. In that issue appeared also a sketch and floor plans of a typical health center building by J. D. Burt, architect for the department. These should be of value to any who are undertaking the establishment of such an institution. Other illustrations of Health Centers actually established, together with information concerning them, are to be found in several issues of the *Health News* since February, 1919.

As part of its educational campaign the state has prepared a poster on the coordination of health activities, which indicates in graphic form the agencies in a municipality that should lead in the establishment of a Health Center. In this physicians, merchants, farmers, manufacturers, school authorities and women's clubs join with the local health department in the formation of a health coordination committee, which is the logical first step towards the Health Center itself.



PROPOSED TYPICAL PLANS FOR
PUBLIC HEALTH CENTRE BUILDING-NEW YORK STATE DEPARTMENT OF HEALTH-

SCALE: 1" = 10'-0"

HERMANN M. BIGGS, M.D.,
COMMISSIONER.

SYMPOSIUM ON THE HEALTH CENTER

III. PRESENT STATUS OF THE HEALTH CENTER

WALTER H. BROWN, M. D.

*Associate Director, Department of Health Service, American Red Cross,
Washington, D. C.*

Read before Sociological Section, American Public Health Association, at San Francisco, Cal.,
September 13, 1920.

THE proper development of the health center idea is the next big step in public health. Many leading sociologists are convinced that in the health center, we have a piece of social machinery of great value for our attack upon the complex socio-medical problems which are now demanding solution.

HISTORICAL

A brief review of the history of the health center idea will form a useful background for our discussion. We are not particularly interested, at this time, in the chronological appearance of the various ideas that have grown up under the general name of health center. We shall devote our attention to the origin and evolution of these ideas and to the possibilities of their application to some of our larger public health problems.

The health center idea has been conceived by public health workers in response to a universal need for some method of securing the practical application of scientific knowledge of disease to individual cases. It is more than a mere coincidence that we find some form of this social device developing almost simultaneously in England, France, Belgium, Wales, Australia, Canada, Cuba—as well as in our own country. This can only mean that we are dealing with an idea of unusual value. Therefore, we should examine it with care and attempt to evaluate it and guide it into the channels of greatest usefulness.

A brief examination of the earlier forms assumed by the health center in America will be of interest. Davis states that the health center idea first took organized form in Milwaukee, where Wil-

bur C. Phillips attempted to make the child welfare work of the Board of Health apply intensively to a definite district. In Cincinnati, the anti-tuberculosis workers took up the idea. In addition to the effort to do intensive work in a limited district, was added home visitation. The Child Federation of Philadelphia utilized it as an approach to infant welfare work. While the primary object here was intensive work in a limited district, it was approached by means of a neighborhood survey and developed the educational value of home visiting.

In New York City, the first health center was established by the New York Milk Committee. Here again the work of the center was confined chiefly to children, but a significant addition to the idea was made by the development of active coöperation through a neighborhood association.

We now approach a new line of development. In Buffalo—Fronczak, and in New York, Goldwater used the health center as a means for the extension of the services of the Health Department to neighborhoods in a more intimate way. To all intents and purposes, these centers became branches of the Health Departments. When as was the case in New York, it includes coöperation and coördination with the voluntary social and health agencies we have a signpost on the road pointing the way in which at some future day, we may secure adequate health service for 100% of our people.

One more primary aspect of the health center idea remains to be described. I refer to the curative aspect. This angle of approach is illustrated by the Maverick Dispensary of Boston. For years,

it was a small clinic treating general diseases. By an expansion of its activities and the coördination of local health agencies, it has furnished an excellent example of the possibilities of official and voluntary agencies, coöperating in a curative and preventive program.

THE HEALTH CENTER ABROAD

A brief reference to what has been happening abroad will complete our picture. In Belgium and France, we recognize the same idea—under the name of "Alliance for Social Hygiene." Here the dominant note has been coördination of existing agencies.

In England and Wales plans for establishment of health centers has been the outgrowth of the type of organization of medical and public health practice. The health center is made the basis for all medical and allied services in the country. At present they are functioning as child welfare centers.

In Canada we have examples of health centers at Toronto where they are largely used by the public health nurses and at Halifax where a broad program of health work has been organized about such a center.

This completes an outline of some typical examples of the origin and development of the health center idea in various parts of the world. They represent a great variety of functions and numerous types of administration. We find their common objective to be the seeking for some device by which to transmit the discoveries of scientific medicine to all of the population.

The above selections have been made with a view to illustrating the important features which have marked the evolution of the first stages of health centers. These features may be classified as follows:

1. Application of some form of health service to limited population unit.

2. Coördination of the official and voluntary health agencies working in a specified area.

3. Provision for modern medical treatment.

All of the health centers of which we have any information, are characterized by one or more of these features in some form. Sufficient experience has now been accumulated, to be of real value in guiding us in the next stages of development. From it, we should be able to build up a conception of the health center which will be of general application in health work.

DISTRIBUTION OF HEALTH CENTERS

It would be of great value to have a complete study of all the health centers in the United States, with a tabulation of their functions, and type of administration. The Red Cross Health Service Department is engaged in such a study but unfortunately it is not yet complete enough for presentation.

An article by Tobey, in *Modern Medicine* on January 1, 1920, enumerates 72 health centers in 49 communities and 33 more in course of establishment. He shows that 3% of the cities between 10,000—25,000 population have health centers, while 25% of the cities over 100,000 are so provided. Since the appearance of this article numerous other cities have established health centers.

WHAT IS A HEALTH CENTER?

Tobey has collected ten definitions of a health center. They vary so widely that no further argument is needed to show the need of some clearly defined idea of what we mean by the term "Health Center." If additional argument were needed, the same writer's list of more than 70 activities that are now being attempted by health centers would surely convince the most skeptical that it is time for us to pause long enough to acquire at least a satisfactory working definition of our terms. Platt in the accompanying paper will have some definite suggestions to make. The speaker will close his discussion by presenting, for your consideration:

THE AMERICAN RED CROSS HEALTH CENTER

The Red Cross health center is to be the chief health project of the peace time program of the American Red Cross. It is a unique health institution and approaches the subject, from an entirely different angle than the health centers already described.

The story of its birth and growth are bound up in the effort to conserve the great social forces of a national organization and direct them into the field of public health in a way to accomplish the greatest good. Consequently, it was essential to find a project which:—

(a) Fitted the traditions and ideals of an organization with 10,000,000 adult members, many of whom were trained in service to others.

(b) Was fundamental in the field of health.

(c) Would lend itself to the administration and personnel of a great organization with chapters and branches in every part of the United States.

The responsibility for the selection of

such a project was great. The care exercised was unusual. We have drawn fully upon the accumulated experience of workers in every field. Physicians, public health officials, educators and social workers have gladly shared with us their secrets of success and warned us of their failures. Out of this wealth of material, by a process of group thinking has come the conception of an American Red Cross health center, which in its primary form can be established and conducted in the smallest community in the United States, yet is susceptible of development to meet the needs of our largest city. This health institution will use the lay membership of the Red Cross, which guided and supported by the trained personnel of the Health Service Department, will bring to the support of the public health movement, the greatest social force this country has ever known.

(Note:—The details of the American Red Cross Health Center were then described and illustrated with lantern slides.)



FRESH AIR AND INSTRUCTION

A very valuable adjunct to the usual lines of health education is the life in the open. These boys, after an invigorating tramp across the country are resting a while in the midst of the dunes on the lake shore while the instructor tells them something of the geology of the country, explains how the sand came to be there, and perhaps tells them how to revegetate the arid slopes. The group is from Camp Roosevelt, Muskegon, Mich., the type of a genus of camps for boys, which not only furnish to the youngsters the foundations of healthful living, but interest them in the great world of nature.



SYMPOSIUM ON THE HEALTH CENTER

IV. IS THE HEALTH CENTER A HEALTH CENTER? NEED OF A POSITIVE HEALTH IDEAL IN THE HEALTH CENTER

PHILIP S. PLATT, M.A., C.P.H.,
*Director, New Haven Health Center,
New Haven, Conn.*

Read before Sociological Section, American Public Health Association, at San Francisco, Cal.,
September 13, 1920.

IT is a tragic truism that man, the crowning glory of creation, is its least perfect physical specimen. Man guards, protects, improves every other living form more carefully than himself. He even accepts imperfection, suffering, disease and deformity as a normal and inevitable accompaniment of human life. He has no conscious "Will to Health."

Perhaps this state of mind is not surprising when we realize that two-thirds of our favored American people have physical defects of a serious or minor nature; that one-third of our American draft army was rejected as unfit to fight for our country, and 15% of those accepted were returned from the training camps; that four-fifths of the draft examinations for the British Army showed defects worthy of note; that the mortality in middle life is on an alarming increase, and that the medical profession is by no means covering adequately the field of much needed curative treatment.

So familiar are we with the idea of sickness and so pressing is the need for medical treatment that our interest in the well person is almost negligible. Dispensaries and hospitals are interested so deeply in getting sick people well that the well person wishing to keep well is not wanted there, if we except a possible well babies' clinic. In one of our largest cities where 10,000 physicians are trying to cure sick people and 300 (in the Health Department) are trying to prevent sickness, how many are devoting themselves to creating health?

And yet there is developing today an unprecedented emphasis upon individual health, not like the beautiful but super-

stitious worship of Aesculapius in the Greece of 400 B. C. and the Rome of 200 years later, with its health-conserving rituals, but a more rational attitude based upon our still fragmentary knowledge of hygiene and preventive medicine. That such a rational interest is arising is manifest from the interest that is developing in the thorough physical and medical examinations of well people, the so-called health examinations. We read with some hundreds of thousands of others on the back page of the New York Times literary supplement that the Life Extension Institute has examined over 175,000 people with the aim of making it possible for the individual to preserve his health, and Dr. Fiske states that the mortality was reduced one-half among several thousand life insurance policy holders who received periodic health examinations and counsel based upon the findings, i. e. counsel as to the correction of their hygiene or suggestions as to what form of medical, surgical or dental treatment to seek. Infant welfare stations have been striving for 15 years to get well babies under intelligent medical supervision. Medical school inspection, however, is still chiefly interested in the detection and treatment of physical defects and what the school child learns from the examination about the inestimable value of perfect health and a sane and joyful way to keep it, is indeed slight.

On the other hand this failure of the average school physician and school teacher, and even of many of the school nurses, is responsible for the development of national organizations of ever

widening influence, such as the Modern Health Crusade movement and the Child Health Organization, which should accomplish great good in the direction of creating a conscious appreciation of the importance and the manner of keeping well.

Other indications of an active interest in personal health readily suggest themselves when the growth and popularity of the many new movements like Christian Science and New Thought are considered; when the large variety of books dealing with every phase of healthy living is recalled; and when we see the mass of health leaflets to which no health agency, public or private, can resist the temptation of adding. The popularity of such a magazine as *Physical Culture* is a reminder that the subject of healthful living is a good seller, when made interesting to the man on the street.

But are there many people who are enthusiastically, yet rationally, striving to maintain themselves in the best possible condition; people who when confronted with a choice between taking proper care of themselves at the cost of a little inconvenience, and neglecting to take reasonable care of themselves, will choose the former as a natural thing?

Individuals here or there may come to your mind, but it would seem that only the athlete, as a class, possesses the attitude of mind that makes it possible to do, without a thought of self pity or self indulgence, the many daily acts which others would consider impossible or at least intolerable. Why is it? The reason is clear. The athlete must keep himself in perfect condition if he is to obtain his goal. We others have not so strong an urge. We think it is not worth while to keep ourselves at our best, or that we cannot succeed as we wish in our work if we have to give our bodies reasonable attention such as we are accustomed to give our machines or our bank accounts. Or we think we shall be the exception and break all the rules and still "get away with it." Or we are simply too

ignorant or too indifferent. The average man must find a substitute for the urge that motivates the athlete, only a more durable one, for the alacrity with which the average athlete breaks training and practices extremes of self indulgence, when the necessity of his training is removed, must be admitted. How can this be done? Can a red-blooded dominant "Will to Health" ever be acquired through rational thinking? Can the urge come through a religious motivation? Or for the average American must it spring from an economic, a purely materialistic, dollars and cents, point of view?

While these questions await solution, most people would agree that a positive, purposive "Will to Health" is desirable for man. It is the rational end of all preventive medicine. It is the soundest of all national policies to have thus a healthy people. It is essential to the fullest enjoyment of life to be well and to stay well. None of these aims can be fully accomplished if man does not deliberately *will* it.

How, then, shall this desirable "Will to Health" become a reality? We must turn first to those existing forces which should logically be expected to be shaping human mind and action along these lines. Surely these forces are the public school, the medical profession, the official health department, and the groups devoting themselves specifically to health education. Few will dispute the statement that the public school and the medical profession have failed miserably in this respect, and it is difficult to measure in any satisfactory way as yet the influence of the health education which public and private health agencies have engaged in earnestly during the past fifteen years, particularly through health officials, public health nurses, dietitians, and social workers.

However great the accomplishment of these forces, we are all ready to admit that it is still woefully insufficient.

Greater energy, better intelligence, fresher vision are needed.

Recently, with the health center, there has undoubtedly appeared a new expression of public health activity, rich in opportunity to bring health nearer to the lives of people. Dr. Brown has just told you of the present status of the health center movement, a movement which is developing so rapidly and in so many different manners that only the Department of Health Service of the Red Cross National Headquarters makes any pretense to know the actual situation. So many and varied in type are the health centers of today that their discussion is only confusing if some degree of rough classification is not offered. Therefore five distinct types are briefly enumerated, common only in respect to a general policy of coöperation with other agencies and in some form of health education work.

Type I, which limits itself to health education along the usual lines of exhibits, talks, literature, and to functions of an information clearinghouse character.

Type II, which does the above but also engages in medical treatment of the sick, through various clinics.

Type III resembles a miniature health department, for it carries on in a local district all or nearly all of the functions of the official department of health under a plan of decentralization.

Type IV is radically different in limiting itself to consultative medical diagnosis of the most modern and scientific character, dependent upon a group of experts and primarily designed to aid and educate the less highly trained physician.

Type V is differentiated from the preceding types by reason of its positive emphasis on the possibility, and the desirability, of good health. It is primarily interested in the well or only slightly indisposed person. It gives careful physical examinations to well people. It is not a dispensary for it does not give

medical treatment. It wishes to create a "Will to Health."

Five types—as widely different in method and even in spirit as could be imagined, and all bearing the same name; each type of undoubted value in the public health field, and each arising out of the needs and opportunities of the local situation and reflecting the point of view and the desires of the local people inaugurating the enterprise.

However I think you will agree that Type V more nearly realizes the ideal of the health center than the others. The question which I ask you to consider is under what circumstances can a health center really develop this dominant note of enthusiastic, rational constructive zeal for better physical manhood? Or are we deluding ourselves with a will-o'-the-wisp?

I invite your discussion of this matter, placing my own convictions before you as a basis for the discussion. Such a health center must concern itself to the highest degree possible with well people only or with people who are merely aware that they are not as well as they ought to be, but who would not consider themselves sick, offering these a careful physical examination, with as much personal and social history as possible. Routine urine analyses should be made, with X-ray, blood or bacteriological analyses made upon the slightest suspicion, preferably by arrangement with some outside agency, like the Health Department laboratory. The purpose of this health examination should be to engage the individual's interest in his own health. He should learn with pride and appreciation about the normality of his separate organs, discover those deviations from normal in a manner and in an atmosphere which will arouse in him a common sense enthusiasm to correct the defects, and to make of him a willing enthusiast on matters of good hygiene. Such an interest in the supposedly well person, such an atmosphere of "Will to

Health," as will be sensed by the individual, can only be developed where medical treatment of the sick is entirely removed from the health center. It goes without saying that it must be available in the community in question. It is only the existence of medical resources in the form of hospitals, dispensaries and local physicians, that makes possible the establishment of this positive health center. But if the treatment of disease is allowed within the confines of the health center it is inevitable that the emphasis should swing from interest in the well person to care of the sick. An atmosphere of the pathological, the smell of disinfectants, the cries of the suffering or the alarmed, the expressions on the faces of those who are leaving after painful treatment—the long wait under these circumstances necessarily establishes a frame of mind which is anything but desirable from the point of view of creating health enthusiasm. Perhaps an extreme picture has been drawn. But even under the best conditions in dispensary or hospital, with a special staff and at special hours, the patient's conscious or subconscious reaction to an established center of medical treatment cannot fail to defeat the main point of the positive health center, which is to keep the individual's mind fixed on his opportunity for good health through his own right living rather than upon the idea of medical treatment for early or advanced sickness.

There are, of course, other requirements to be exacted of a true health center. The personnel must be imbued with the idea of health conservation and think in terms of health rather than in those of disease. The educational activities must take on this positive character with a freshness and a vigor not found in the educational material of today. As the most effective educational method is through personal service, which the public health nurse exemplifies, the educationally minded, generalized

nurse who uses her bedside nursing as an opportunity for health teaching is almost a necessity in the true health center. Likewise provision must be made, either directly through the health center personnel, or indirectly through the social agencies of the city, for modern social service work, for the conditions which social service can alleviate or remedy are responsible for so much of our ill-being. Still another step, much to be desired in a true health center, would be facilities on a small demonstration basis for individual corrective physical training. The man or woman who in a few weeks can see the benefit which he or she may obtain from a few general or special exercises in correcting fallen arches, improper foot wear, weakening abdominal muscles or general lack of muscular tone, will the more readily correct other unhygienic habits and will become an enthusiastic and contagious example of the value of good living.

These conditions exist fully in no health center today. They are approached in very few. The Y. W. C. A. in New York City was the first to my knowledge to offer a free medical and physical examination to any well wage-earning girl, following up the girls who needed medical treatment or physical training.* The dominant note of this health center is "Be not content with half health; make yourself your physical best." Through unhurried physical and medical examinations of the most personal nature, through individual health exercises in a small demonstration gymnasium, and by helping individuals needing medical treatment to find it, this modest health center is accomplishing very real results in health realization and in awakening a "Will to Health." Furthermore, what is particularly interesting is that the health ex-

*This health center has been taken over by the Women's Foundation for Health as a demonstration health center of the positive type. A fee of \$5.00 is now charged.

amination is really in great demand. Within a short time after the establishment of the center appointments had been made for two months in advance and a waiting list of 200 recorded.

A much restricted type of true health center work is being carried on with conspicuous success by many of the Universities and schools of the country, whose annual physical examinations of a careful character are unfolding unsuspected conditions of great health significance among the student body.

The Framingham Tuberculosis and Community Health Demonstration has gone far along many of the true health center lines, while concentrating on tuberculosis as its major problem. The Life Extension Institute and the health services of several of the Life Insurance companies are carrying out, through periodical medical examinations, one of the cardinal features of the health center.

There are of course many instances of community health organizations in which the opportunity for medical examination on the part of the individuals under direct observation is arranged for. An excellent example of a combined health and relief program for a community, with emphasis upon medical examination of every member of any family under care, is to be found in the Health Station of the Association for Improving the Condition of the Poor, New York City.

I beg your indulgence in referring to the New Haven Health Center. It is but four months old.* It aspires to be a true health center; it is not so yet. It is unique: what health center is not?

As briefly as possible, then, the New Haven Health Center is supported and controlled by the Board of Health, Visiting Nurse Association, New Haven County Chapter of the Red Cross, and New Haven Medical Association. It serves a 75-block community of about

27,000 people, predominantly foreign born or of foreign parentage, chiefly Italian. Its staff of 19 consists of a director, a secretary, a full time medical examiner (medical director), a half time medical examiner (a woman physician), two physicians, each holding two infant welfare conferences weekly; detailed by the Visiting Nurse Association are a supervisor of nurses, 7 general public health nurses, and a part time dietitian; detailed by the Health Department are 2 school nurses, 1 sanitary inspector, and a dental prophylactician. In addition a number of volunteers are assisting in various capacities.

Its activities are best realized by considering separately those carried on within and without the headquarters. The headquarters is given over to the physical and medical examination (but not treatment) of the well, near well or unwell, to the periodic examination of pregnant women, to individual health advice, to educational and informational work, to nutritional classes, vaccination of preschool children, the frequent staff conferences, routine administration and executive work. The important point is that the individual coming to the Health Center meets with a helpful and healthful atmosphere. No opportunity is missed to emphasize the possibility and desirability of more healthy living.

Outside headquarters, in the district, our public health work embraces instructive bedside nursing and health education by generalized, localized nurses, health supervision of school children, dental hygiene, dietetics, and sanitary inspection. The three infant welfare stations are also located outside at different points in the district, and a fourth is soon to be established in the headquarters.

In these few words the barest outline of the Health Center is given. We are attacking disease through:

*On Nov. 13, 1920.

Acting as associate epidemiologist for the Health Department,*

Generalized nursing care,

Early recognition, by means of physical examinations, of conditions needing medical attention,

Bringing the individual needing medical care in touch with his doctor or dispensary,

Supervising the health of the school children.

We are also conserving health in the healthy through:

Health examinations of well people and pregnant women,

Advice in personal hygiene,

Well baby conferences,

Special health classes,

Educational work of leaflets, posters, lantern slides, window exhibits, etc.

Seeing that prophylactic measures are employed when possible,

Health talks before groups,

Educational work of school nurses, dietitian, dental hygienist, and sanitary inspector.

Community interest in health matters, is being aroused through a local advisory

*On Nov. 15 the Health Center, in the person of its Medical Director, Dr. Ettore Ciampolini, was appointed Associate Epidemiologist of the Health Department and requested to assume responsibility for the control of communicable disease in the Health Center district. A part time contagious disease nurse is at his disposal. This heavy responsibility was accepted only because it was felt that under the circumstances it was our duty to the community and the greatest service the Health Center could render the Health Department.

council, and shortly we hope to have organized block workers.

Statistics show inadequately the real work that is done by any health center. Much of the most valuable work that is done cannot be so conveniently labelled and counted. However there is some significance in the fact that more than 19,000 health promoting services were performed by the Health Center during the first four months of its activity.*

We ardently hope to progress effectively along positive health constructive lines, believing not only that this is the most needed line of health center development, but also that it is a development which Departments of Health must eventually embrace.

In conclusion, we repeat that the time has come for a more aggressive concern with positive health ideals, and that among other agencies the health center has an unprecedented opportunity to emphasize this constructive point of view. The conditions under which it is believed this can be done successfully have been indicated. A few examples of health centers which are trying to realize this ideal have been mentioned. May the health center movement develop, not unconscious of the splendid opportunity for leadership in constructive health teaching and in the arousing of an enthusiastic "Will to Health."

*The health services numbered over 30,000 on Jan. 1, 1921.

Prophylactic Inoculation Against Yellow Fever.—From the results of vaccination in guinea pigs, it may be concluded that when sufficient quantities of the killed culture are given, these animals are usually rendered resistant to a subsequent infection with *Leptospira icteroides*. The degree of protection, however, is not strictly proportional

to the amounts of the vaccine inoculated. As regards the vaccination of human beings, thus far the results are distinctly encouraging; but it is realized that many more observations will be needed before a final decision of its value can be arrived at.—H. Noguchi and W. Pareja, *Jour. A. M. A.*, Jan. 8, 1921, 96 (D. G.)

Not too early to be thinking about the Fiftieth Annual Meeting of the A. P. H. A. in New York City, November 14-18, 1921.

SYMPOSIUM ON THE HEALTH CENTER

V. THE AMERICAN RED CROSS HEALTH CENTER*

What It Is and How It Functions

THE American Red Cross is the people's organization. It inclines its ear to the call of humanity. It responds to the call whenever conditions and resources make it possible and feasible to do so. The war and the influenza epidemic have created a more general and a more earnest interest in physical fitness. National, state and local health officials, private health agencies, doctors, nurses, teachers and social workers, all are endeavoring to make this new interest really count for better health.

The call for continued and extended health service came to the Red Cross from various sources. It was urged that the Red Cross had a nation-wide organization and influence, that it had acquired considerable experience in health work, and that, therefore, it was most advantageously situated to direct this new interest of the people in health into channels that would insure, not only its conservation, but also its growth along practical health lines. In response to these earnest requests the Red Cross decided to make health service the central feature of its extended, peace-time program. It carefully considered the following three important questions:

1. In what manner can the general public be intelligently interested in the promotion of public health?

2. Through what means can their intelligent health interest find practical expression?

3. How can lay people become real participants in public health activities without encroaching upon the technical functions of professional health workers?

A SOCIAL HEALTH AGENCY

The American Red Cross believes that it has found the answer to these three

questions through its social health agency, the Red Cross Health Center, which is intended primarily, if not solely, as an institution from which health radiates rather than an institution to which disease gravitates. The Red Cross Health Center has been designed to include in its activities, in addition to clinics which are always directed by local doctors, those of a general informational, social and educational character, which can be organized and conducted by lay people, with technical advice and supervision also provided for in its scheme of organization.

The following is a summary of these Red Cross Health Center activities, which distinguish this institution from the clinical health center, an institution primarily intended for the diagnosis and treatment of diseases:

1. Health Information Service: Puts people in touch with existing health agencies to answer such questions as: (a) How they may be admitted to hospitals and sanatoria; (b) How they can have their drinking water analyzed; (c) Where they can get a nurse; (d) When to call for the health officer or a doctor.

2. Health Education: (a) Distributes popular health literature; (b) Gives health lectures; (c) Secures health slides and films; (d) Gives health playlets.

3. Health Exhibits and Demonstrations: (a) Gives a succession of health exhibits on a hundred or more health subjects; (b) Gives demonstrations, such as modification and home pasteurization of milk and how to care for the baby.

4. Health Instruction: (a) Class work in home care of the sick, first aid, food selection, personal hygiene; (b) Club work—Mothers' Health Club, Little Mothers' League, Children's Health Hour.

5. Growth and Nutrition Classes:

*This article was prepared for the JOURNAL by the Department of Health Service of the American Red Cross, Washington, D. C.

(a) Weighing and measuring of babies and school children; (b) Preparing special lunches for improperly fed children.

GENERAL RED CROSS POLICIES

The Red Cross is a service organization. It serves humanity both in its individual and in its social aspects. It serves persons, private organizations and public agencies. It undertakes humanitarian work when the need for it has been definitely ascertained and when no other agency in the community is established or prepared to undertake it. The Red Cross, however, never claims any priority right in undertaking this work. It never considers that in any respect it has preempted a local social welfare or health field. While it never undertakes any work in which another local agency is engaged, it may serve in a supplementary capacity to such an agency in order to enable this agency to carry out its program. It withdraws from the field, however, just as soon as this agency is prepared to function completely without the aid of the Red Cross.

The Red Cross recognizes that the legally constituted health authorities are supreme in the field of public health. It recognizes at the same time, however, that these public health authorities are usually handicapped by inadequate civic and financial support. It sees a great opportunity, therefore, to act in a supplementary capacity to the public authorities in educating the general public to a better appreciation of their health service. It thinks that it can do so best by demonstration through its educational and clinical health centers. Through these health centers the public is gradually being educated, and is approaching a proper understanding of the character of the local health agencies and of their scope of possibilities in promoting health and saving lives. When this knowledge has taken firm root in the public consciousness, it will be possible for the Red Cross to transfer all of its health activities to these health agencies in order that they

may be permanently administered and maintained. The Red Cross, therefore, consults these agencies, both state and local, before it establishes its health service anywhere, and the program of the Red Cross educational and clinical health service is adapted to their health programs.

HEALTH CENTER RESPONSIBILITY

Red Cross Chapter officials are governed in their work by the established principle that a democratic organization, such as the Red Cross, can undertake community welfare work of any kind only in a broadly representative capacity. Therefore, the management of a Red Cross Health Center, as a community health enterprise, is the direct responsibility of the Chapter Executive Committee, which responsibility it cannot delegate to a sub-committee of professional workers or to another health agency in the community, *as long as it is being maintained by the Red Cross*. The management of a Red Cross Health Center then, is and remains in the hands of local lay people acting in a representative capacity for the community. Provision is made, however, for a Health Center Advisory Council, consisting of representative officials of those agencies in the community which are actually operating in the local health field.

The membership of this Health Center Advisory Council includes the Health Officer, Superintendent of Schools, an official of the medical society, a dentist, a representative of the Public Health Nursing Association, of the Tuberculosis Committee, of the Child Welfare League, and of other local agencies that are engaged in some form of health work. With these local authorities to call on for technical information, advice and co-operation, and with the technical supervision and direction provided through the Red Cross Health Service Department, both at National and Division Headquarters, the lay executive committee of the Chapter is able to conduct a

Red Cross Health Center as a most useful supplementary health agency of the existing health forces in the community.

THE CLINICAL HEALTH CENTER

While lay people can conduct these general health activities, it should be kept in mind that this does not apply to the medical activities of the clinical health center for the diagnosis and treatment of diseases. Where clinics are conducted, in addition to these social health activi-

ties, it should be clearly understood that the local doctors are in supreme command of the clinics and that their "right hand man" is the nurse, in the handling of patients, the keeping of clinical records, and in the follow-up work. Even then, however, general lay administration of the Health Center is desirable. The lay director will not be inclined to interfere with the conduct of clinics which will be recognized as being entirely technical in their character and, therefore,

AMERICAN RED CROSS

HEALTH CENTER

Child Hygiene

Health Instruction

Teaches People How to Keep Well

Health Information

Growth and Development Clinic

First Aid

Your Membership Helps to put a Health Center in Your Town

entirely outside of the supervisory jurisdiction of a lay person.

The character and scope of a health center are largely determined by the size of the community, its available resources, and the prevailing private, official and professional interest in the project. Where there is a relatively large population living close to the poverty line, where there are many unmet needs for specialized medical services, where there is a high type of social and professional leadership, the interest in organizing facilities for proper and adequate medical treatment is paramount. While the educational health program would seem to offer a more generally applicable and a more permanently effective means of promoting health and preventing diseases, the active and insistent demand for better medical service to the sick controls the hearts and the minds of those engaged in health work.

When, therefore, the establishment of a health center is being contemplated, when a health center program is being formulated, it is but natural that the necessity for organizing medical clinics for those unable to pay should receive primary recognition. The clinical health center organizes the professional equipment and special skill of physicians for the diagnosis, treatment, and prevention of diseases among certain groups of ambulatory patients. The ideal clinical health center, however, organizes in addition the social and educational equipment and special skill of social health workers for the more general diffusion of health intelligence.

USING ALL HEALTH RESOURCES

The Red Cross, through the medium of its Health Center, diffuses health intelligence and makes the teaching a personal hygiene of broader application. To this end it uses every suitable material and social device, every available health resource. It uses the primary health resources, the doctor, the Health Officer,

the dentist, the nurse and the dietitian, for technical advice and information, for lectures, instruction courses and demonstrations, and for clinics. It uses the secondary health resources, popular health literature, issued by official and private health agencies. It creates health resources. Through the health playlet it makes the child a health resource; the young girl through the Little Mothers' League; the artist through the preparation of health posters and exhibits; the story teller through the Children's Health Hour. The gospel of health is spread by the health fairy, the health clown, and the marionette; by the newspaper, the stereopticon slide and the motion picture film; by the neighbor, relative and friend, by the teacher, preacher and social worker.

THE RED CROSS HEALTH CENTER IS A PLACE FROM WHICH HEALTH INFLUENCES OF ALL KINDS RADIATE INTO ALL PHASES OF THE COMMUNITY LIFE

During the first year's operation of the Red Cross Health Service Department a total of 318 Red Cross Health Centers have been established throughout this country by local Red Cross Chapters. Some of them constitute only the small beginnings in educational health activity with the usual addition of a baby welfare clinic or a nutritional clinic. Others have more ambitious programs in preventive and curative health work. Besides these, there are 588 Chapters that have undertaken some phase of health work, other than nursing and first aid, which constitute health centers in process of organization. The Health Center idea, therefore, has taken hold of some 900 Red Cross Chapters up-to-date. This demonstrates that there is a tremendous, country-wide interest in public health, that the Health Center is a most timely institution, and that the health forces of our communities can be brought together for the common good.

SYMPOSIUM ON THE HEALTH CENTER

VI. BABY HEALTH CENTERS

LYDIA ALLEN DEVILBISS,

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BABY Days and Baby Weeks have played a large part in arousing public interest in child welfare. They have also been of great service to the babies. But these occasional examinations of large numbers have but served to emphasize the need for periodic inspection of children of the pre-school age during the most plastic period of their development. These regular examinations may best be obtained in the Baby Health Center.

Baby Health Center is used as a single term to cover all forms of baby and pre-school age health work conducted from a given center. The Baby Health Center differs from some Infant Welfare Stations, Milk Stations and Baby Clinics in that it is not intended primarily for the children of the poorer districts, but is meant to serve all the children of pre-school age of a given community. To have a Baby Health Center associated in the public mind with care given indigents would be fatal to its success. It should be established, whenever possible, as an integral part of the city or county department of health.

A Baby Health Center in its simplest form consists of a convenient place equipped with a pair of scales, a table, a few chairs and some records, where a physician, nurse or interested person with a creditable knowledge of young children may weigh and observe for deviations from the normal such young children as are regularly presented by their mothers, and to refer such children as are needing treatment to the proper source.

In its most complete development, a Baby Health Center may include hospital equipment or facilities, with children's specialists and trained nurses in attend-

ance, and lay workers, paid or volunteer, who are responsible for the enrollment and attendance of all the children of their respective districts.

Personnel.—A public health nurse, and if possible a physician especially interested in keeping children well, each paid for his service, are advisable in the conduct of a Baby Health Center. A group of lay workers, club women and interested mothers to enroll children and to encourage their attendance, to assist at the Center and to help with the follow-up work are essential to its success.

Location.—A Baby Health Center needs to be convenient of access. The building should not have religious, political, fraternal or other affiliations which would prevent any appreciable part of the community from attending. A community center, library, rest room, school-house, courthouse or city hall or like location may serve as a Baby Health Center, rent free.

Equipment.—A good pair of balance scales and a tape line are essential. Spring scales are seldom satisfactory. The scales should be provided with a pan or basket securely attached to the scale for weighing the smallest babies. An ordinary kitchen table, plain wooden chairs of comfortable dimensions and a roll of paper towels or napkins complete the necessities.

Records.—For records, consult the local city or state department of health. Standard Child Hygiene forms will be sent on request to the U. S. Public Health Service, Section on Child Hygiene, Washington, D. C.

Time.—A Baby Health Center may be opened any time during the year. The early summer is perhaps the most pro-

pitious time to open, beginning in June and continuing through the hot weather. With a good start through the summer it may be possible to continue it throughout the year. This is the most desirable arrangement.

Attendance.—The establishment of a Baby Health Center, even with complete and attractive equipment and the presence of children's specialists and trained nurses, will not insure the attendance of mothers with their babies. Obviously, the physician and the nurse cannot canvass the neighborhood or urge an acceptance of their services, except in the routine of their professional calls. For this reason, the success of a Center in large measure depends upon the organization, or better still the organizations, which are backing it in the community. Without popular support and without the services of lay women to enroll babies and promote their regular attendance the conduct of a Center is uphill work and will be without that large measure of success which the effort merits.

Organization.—In a small city or rural community, a physician, health officer or public health nurse may establish a successful Baby Health center without formality and with very little organization. But in larger cities or to establish one to serve the babies of a county, more organization is necessary.

The health officers most successful in establishing Baby Health Centers and other forms of community health activities are those who have brought to their support the entire organized forces of the community. This may be accomplished through a health committee, composed of one representative elected or appointed from each of the organizations of the community directly or indirectly interested in health. This committee may act as a federation of organizations, or where there is demand it may serve as the nucleus of a new organization, a Health Association.

In the absence of a health committee,

or as a sub-committee, a child welfare committee or child hygiene council may be organized. This form of committee is particularly valuable in organizing state activities in child hygiene, and in that event is composed of the state chairman of child welfare of all the existing state organizations. In many cities or club districts, this child welfare organization is already effected by a federation of all the child welfare sections of local organizations.

This coöperation of all agencies, including both private and official bodies interested in health and child hygiene, is essential to the success of the Baby Health Center.

Clinics in connection with a Baby Health Center.—Baby Health Centers away from the larger cities may find themselves handicapped by the absence of pediatricists or other specialists to conduct special examinations of babies, or to direct the treatment of such cases as may require more facilities than can be supplied in the district. Where there is a demand for a special clinic, or sufficient cases may be brought together to warrant, arrangements may be made with a specialist to attend for the day, the local doctors assisting with the examination and operations, and carrying out the after treatment. In such clinics a double purpose is served: the little patients have the benefit of expert advice and treatment and the local physicians have the benefit of the clinic. In this manner a large number of children are given expert treatment when otherwise it would have been impossible for them to have obtained it.

Whenever possible the Baby Health Center or clinics in connection with it should be conducted without charge and without any reference to charity. But when the appropriations for public health protection are not adequate to cover the expense then other provisions must be made. The expenses of the clinics may be met by a pro rata charge, or the patients may pay as they are able. Or, as

has already been done successfully in several districts, a small membership fee is charged each family sufficient to cover all expenses of the Health Center.

Health of School Children.—The Baby Health Center which gets well established during the summer may be in position when school opens, if desired by the school authorities, to extend its facilities to children of school age. Where the Center location adapts itself to school clinics a dental chair may be established; eye, ear, nose and throat treatments and operations furnished; physical and mental examinations provided for, and nutrition clinics organized.

Health work for children offers the

one easiest method of approach to the hearts of a community. The Baby Health Center is but the beginning. Under the direction of a trained public health officer, laboratory facilities, tuberculosis clinics, venereal disease clinics, and physical examination clinics for the entire community may be added as their necessity becomes apparent and the desire for them is expressed. Thus in the course of a comparatively few years and in a perfectly logical manner a complete Health Center and adequate health protection for the entire community may evolve from the public health work begun for the children in the Baby Health Center.



A Study of the Incidence of Hereditary Syphilis.—A report recently made to the American Pediatric Society presents a study on this subject which was made with the aid of a grant from the U. S. Interdepartmental Social Hygiene Board. The method employed was the histological examination of a series of placentas, together with a Wassermann reaction on the fetal blood collected from the umbilical cord at birth. The material collected from several sources included about one-fifth of the children born in St. Louis over a period of months, almost equally divided among charity and private patients. Up to the present 129 infants of two or more months of age were examined. Ten per cent of these presented undoubted evidence of syphilis, and the remainder were just as evidently non-syphilitic. When classified according to races the incidence is 15.8 per. cent among negroes and 5.5 per cent among whites. The histological examination of the placenta as to the presence or absence of syphilitic changes corresponded to the established diagnosis in 95.5 per cent of the cases. The lack of correspondence consisted entirely in finding no syphilitic changes in the placenta in cases in which the infant had syphilis. In every instance in which the placenta was noted as showing syphilitic changes, the in-

fant was found later to have syphilis. In this group of cases in which the diagnosis was established, the Wassermann reaction on the placental cord blood corresponded to the diagnosis in the infant in 96.5 per cent. Here also the discrepancies were due to the findings of a negative Wassermann reaction in the fetal blood in instances in which the infant was syphilitic. In every instance in which the fetal blood gave a positive Wassermann reaction the infant was found to have syphilis.

Therefore, in order to give a clean bill of health to an infant at birth, it was necessary to have all three examinations negative, that was, maternal Wassermann reaction, placenta, and cord blood, and even then there might be some uncertainty. The fact that the treatment of the mother during pregnancy will result in a non-syphilitic child had been proved in another observation. In this series, that observation had been confirmed. It was the belief of the observers that the whole group fairly represent a cross-section of the population of St. Louis and if such is the case, the incidence of hereditary syphilis at the time of birth was 6 per cent.—P. G. Jeans, M. D., and J. V. Cooke, M. D., XCVIII—8, Aug. 21, 1920. (*A. N. T.*)

SANITARY CONTROL OF A PUBLIC SWIMMING POOL

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Read before Sanitary Engineering Section, American Public Health Association, at San Francisco, Cal.,
September 17, 1920.

All parts of modern swimming pools must be maintained in sanitary fashion or they may be public health risks. This paper outlines some of the problems and tells how a pool in Florida has tried to solve them. Here are scientific observations of pool conditions not often secured and more rarely at the service of officials.

SINCE its opening in April, 1920, the managers of a public swimming pool in South Jacksonville, Fla., have been coöperating with the State Board of Health in the operation and control of their pool. Several months before its opening the owners sought advisory suggestions as to changes in the pool construction, dressing room arrangements, and regulations. A thorough inspection was instituted, a number of defects pointed out, several simple recommendations made which were at once complied with. Following the completion of reconstructive changes and building renovation the pool was opened to the public; since then with the exception of a few days, a careful watch has been kept on the operation and supervision. Numerous bacteriological examinations have been made of the pool water, careful attendance records kept, also records of daily mean temperatures of pool and air.

The pool was built several years ago as a part of an amusement tent, previous to the passage of the Florida statute on bathing places. Until this year the management has been more or less careless and indifferent to proper operation with a result that on several occasions in the past the State Board of Health has almost found it necessary to close the pool. During the summer of

1917 a number of cases of eye and ear infections in Jacksonville were attributed by medical men to this source, but this was never fully confirmed.

The pool is constructed of massive concrete surrounded by a frame structure which houses the dressing rooms, showers, toilets, laundry, spectators' gallery and offices. The pool proper is 101 feet in length, 44 feet in width, 3 feet deep at the shallow end and 8 feet deep at the deep end, having a capacity of approximately 183,000 gallons. The plant has its own water supply in the form of an 8 inch deep-drilled, free-flowing well. Jacksonville, it might be stated, is located in the artesian area, deriving a hard water from the Vicksburgian aquifer. The pool well has a strong flow and a head of about 20 feet at the ground surface. Water flows through the pool continuously into the St. Johns River nearby. There are no circulation or filtration apparatus.

Water enters the pool through two 3-inch pipes submerged in the shallow end of the pool and leaves through a 6-inch opening located in one of the deep end corners.

The walls and bottom of the pool have a smooth cement finish painted a light color.

Surrounding the pool, ten feet wide and six inches lower than the 18-inch

ledge of the pool top is an areaway wooden floor for bathers. The dressing rooms are located on the sides of the building, one side for men and the opposite side for women. The manager's and clerk's office is at the head and center of the pool where constant supervision can be maintained over the pool and its users at all times. A professional swimming instructor is in attendance at practically all open hours.

In making the first inspection previous to the opening an effort was made to suggest little changes which would have a tendency to better control the bather in his movements and conduct after entering the building. In former years, for instance, the management had allowed spectators and guests the freedom of all floors. Seats were provided in the areaway surrounding the pool and those not swimming or simply waiting could track dirt over a floor primarily intended for bathers. This custom resulted in much contamination being carried on bare feet directly into the pool from the dirty floors. It was felt that a simple control of the bather in his movements, and the segregation of the spectator or waiting guest would accomplish a decided improvement. Formerly several entrances were also provided from the dressing compartments to the pool, some of these entrances being remote from baths and toilets. It was, therefore, advised that all openings except one on each side be eliminated, that one located adjacent to the showers and toilets. In other words, the path from out of doors to the dressing rooms, thence to the baths, toilets and pool, was progressive and no ground had to be covered several times. A person entering the pool has to enter near the baths and in such instances when near the showers he usually bathes and voids the bladder. The areaway around the pool was also fenced off in such a manner that no spectator could gain access to floors intended for bathers. Furthermore, spectators were excluded from

dressing rooms or floors leading thereto. In this manner the bather is controlled fairly well from the time he enters the building, also the spectator. The attendant is so located that no one evades scrutiny. In the private pool as found in clubs and gymnasiums it is comparatively easy to effect a control of the bather and establish certain strict requirements but to do so in a public pool where a fee is charged without antagonizing patrons is a more or less delicate matter.

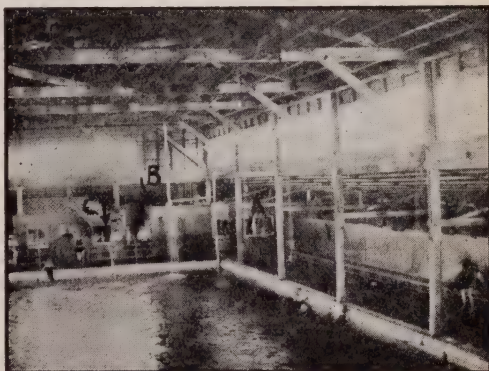


PLATE I

Note areaway around pool and segregation of spectators by fence. Laundry is at A, entrance to dressing rooms at B, and office and attendant at C.

In addition to the several changes outlined above, a set of rules and regulations were drawn up and posted conspicuously in every dressing room, in corridors, in toilets, etc. These regulations were as follows:

NOTICE!

TO THE PATRONS OF SWIMMING POOLS AND OCCUPANTS OF THIS DRESSING ROOM

To maintain a high standard of cleanliness and sanitation and protect the health of all patrons, we respectfully request you to follow the few instructions given below. The management reserves the right to refund fees and refuse the use of dressing rooms or pool to those deviating from these instructions.

It is our aim to conduct this pool as

directed by the State Board of Health in accordance with Florida Laws, Chapter 7825 (No. 43).

1. No spitting is allowed into the water of the pool, on any fixtures, equipment or floors.

2. Do not deposit waste or refuse in dressing rooms. Receptacles are provided for all refuse.

3. Before entering the pool you are requested to relieve your bladder and take a shower bath. This is for your own protection.

4. Persons having skin eruptions or disease will be refused the use of the pool.

5. No profane or boisterous language will be permitted in this building.

6. Any person detected defacing property in any manner will be arrested.

All patrons should conduct themselves with decorum as Ladies and Gentlemen and assist us, by their coöperation, to maintain a pool meeting the sanitary requirements of the State Board of Health.

The management will appreciate any suggestions by patrons leading to the betterment of the pool and this building.

A number of large signs were also conspicuously posted requesting bathers to take showers before entering the pool.

No sooner had the pool opened for business than patrons observed the differences between the old and new. Many people made kindly and approving remarks about the changes and an air of confidence was observed. The patrons fell in line to a surprising degree and where formerly lack of order and control prevailed a willingness to obey was found. The toilets and baths are extensively used and the management states that of late nearly everyone who enters the pool first uses the toilet and showers. Since April, 30 bathers have been refused the pool because of skin infections.

Suits are used. A great many bathers bring their own suits; others rent from the management. All suits and towels after use are thoroughly laundered and

dried in a small laundry provided on the premises. This was also added at the suggestion of the State Board of Health. This laundry is equipped with several large vats, scalding water, and an electric washer. All suits are thoroughly soaked and washed in suds and hot water, twice rinsed and wrung out. Towels are likewise handled and finally rinsed in a water containing sodium hypochlorite.

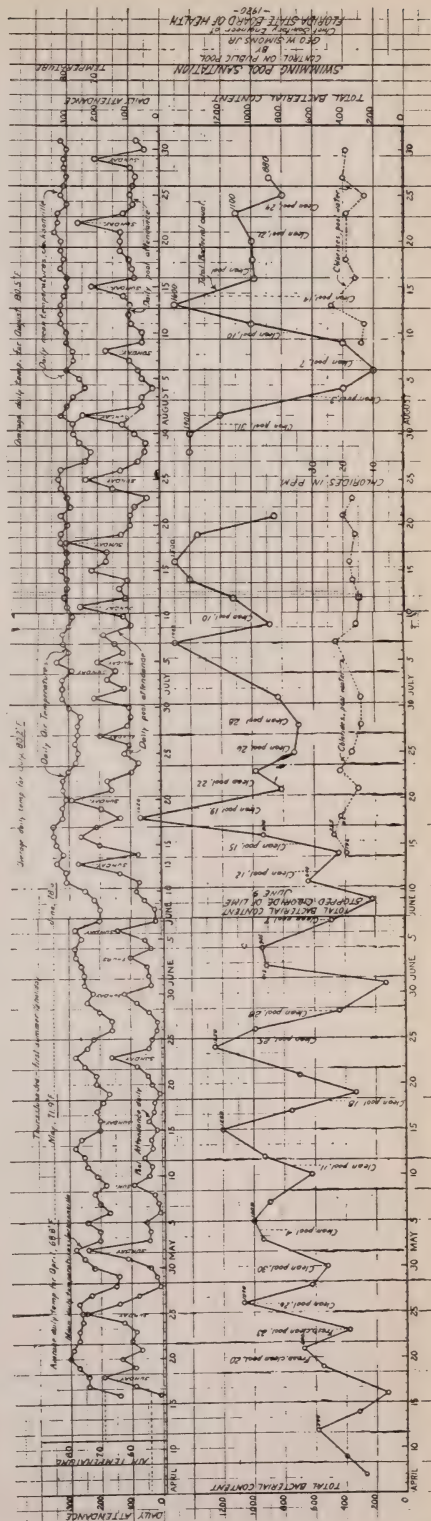
Pool cleaning is done by completely emptying the pool on an average of twice weekly and scrubbing with stiff brushes and soap. A thorough hose flushing follows the scrubbing. After the flushing the outlet is opened, the well turned on and clean water allowed to wash over the floor to the drains. The outer valve is then closed and the pool allowed to fill. When the water elevation reaches two side overflows the outgoing valve is partially closed to maintain a steady head. In its daily operation the continuous flow through the pool amounts to about 25,000 gallons an hour of new water which means a complete water change about every seven hours. The average temperature of water in the pool during August was 78° F.

The attached graphs show something of pool operation. Until about June 10 the daily mean temperature of air was quite low; this naturally affected pool attendance and the bacterial contents. After June 10 the daily temperature gradually mounted. The average for July was 80.2° F. and for August 80.5° F. The attendance curve shows a number of periodic peaks which assisted the management greatly in selecting cleaning dates. Sunday attendance figures are especially high, also the Thursday holidays after June 3. With the persistence of summer weather follows an increase of travel to the nearby ocean beaches; consequently the pool daily totals do not increase as one would expect. The attendance follows the temperatures. It will be noted in July (25-31) a drop in temperature was accom-

panied by a decided drop in patronage. During June the average daily attendance was 126, for July, 147, and for August, 105. The drop in August was undoubtedly due wholly to heavy beach travel.

The bacterial results are of interest in the work with this pool. When daily mean temperatures were low, to June 10, the average bacterial contents were comparatively low, but this average began to increase with the higher daily mean temperature. The pool attendance increased also with the advent of warmer weather but not to a great degree. The fluctuations were wide and varied after June 15. From early in May until June 9, nightly applications of chloride of lime were made which doubtless were effective. The high bacterial contents it is believed were mainly due to causes other than contamination by bathers. In every examination gas fermentation of lactose has been noted in 10 cc. Durham tubes, only occasionally in 1 cc. and very seldom in the 0.1 cc. tube. Standard methods were employed, all counts were on agar-agar incubated at 37.5° C. for 48 hours, and fermentation in lactose broth. The average bacterial counts for April were 570; for May, 800; for June, 770; for July, 1,600, and for August, 900. The latter two months experienced the increased air temperature.

The bacteriological method of ascertaining the sanitary quality of a pool water is generally recognized as being faulty to the extent that results are not available for at least 24 hours following the sample collections and usually not until 48 hours. An endeavor was made to find a ready means of ascertaining pool water quality. It is well known that body excretions contain chlorides; also the natural water contains chlorides. It was thought probable to arrive at some consistent relation between the chlorides variations in pool samples, the bacterial contents and the pool attendance. On June 14 the chlorides content determinations were started and continued until



August 31, with the exception of a few days in late July and early August. It will be noted that the chlorides curve follows the bacterial curve quite regularly, but the variations are small. The normal chlorine of the pool water issuing from the well is 9.8 p.p.m. The method offers a suggestion to future development and possibly some quick, easily-determined chemical test can be developed that would enable pool operators at any moment to ascertain the quality of their pool water.

At no time since the tests on this particular pool have started has the water been considered deleterious or potentially dangerous. It is true that the counts

have at times exceeded the California standards, but it is hard to believe the excesses were serious considered in conjunction with the lactose fermentation and daily mean temperature.

The above briefly describes the manner in which one pool operator by consistent and rigid supervision and control operated a pool to the satisfaction of all concerned. A combination of means were employed, namely (a) reconstruction of structure to control movements of patrons, (b) periodic cleaning of pool, (c) careful laundering of suits and towels and (d) strict regulations. The methods employed here are applicable at every pool.



Dogs in Slaughter Houses.—According to the annual report of Dr. E. A. B. Poole, M.O.H., slaughter houses in the Wellington (Somerset, Eng.) urban district are small and hence are less easily kept clean. Dr. Poole continues: "They are not modern in type, and it does not seem to be sufficiently understood that they should be used for slaughtering food animals only, and not as places in which to hang up harness and other temporarily unwanted goods. It is somewhat difficult altogether to exclude dogs, although their undesirability as visitors has been repeatedly pointed out. It is forgotten that they practically always suffer from worms, the eggs of which may develop in human beings and cause serious disease." Dr. Poole adds that whitewashing is carried out regularly, but that it would be much better if the walls were rendered in some impervious washable material.—*Medical Officer*, Jan. 1, 1921. (H. N. C.)

Malaria Control in Spain.—By royal decree there has been named a commission to undertake the work of malaria control in Spain. The Spanish Red Cross, assisted by the League of Red Cross Societies and with the support of the medical profession, has offered its services to the government to aid in carrying out this work. Almost 600 communities in Spain suffer from endemic malaria and in even some of the important cities the mortality from malaria is as high as 5% of the total death rate. The work if completely done will eradicate malaria from about 1,000 square miles now considered malarial. It is estimated that the cost of the sanitation of this area will be about 50,700,000 pesetas and that the consequent increase in the value of the land will be something over 100 million pesetas.—*Rev. Int. Croix Rouge*, Dec. 15, 1920. (H. N. C.)



The Symposium on University Health Measures, including the papers read at the San Francisco meeting of the Association, are scheduled for the April issue of the JOURNAL.

NOMENCLATURE OF TUBERCULOSIS

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Cambridge, Mass.*

- 1—Abdominal phthisis. (1893—Syd. soc. lex.) cf. 54, 108, 111.
- 2—Acute caseous consumption. Lungs only affected, great rapidity of development due either to virulency of bacilli or low vitality of victim. cf. 40.
- 3—Acute hydrocephalus. cf. 10, 107, 110.
- 4—Acute miliary consumption. Whole body as well as lungs studded with tubercles distributed by the blood. cf. 40.
- 5—Acute miliary tuberculosis. Ibid.
- 6—Acute phthisis. (Also acute consumption and tuberculosis.)
- 7—Bat wing's disease. (1876—Trans. clin. soc., IX, 165.)
- 8—Beinfrass. (Ger.) cf. 12.
- 9—Bovine tuberculosis. Of cattle.
- 10—Brain fever. As far as due to bacillus tuberculosis.
- 11—Carie. (Fr.) cf. 12.
- 12—Caries. Of the bones. (1634—T. Johnson, Parey's Chirurg., XIX, 27.)
- 13—Cheradi. (Ital.) cf. 75.
- 14—Choirades. cf. 13.
- 15—Con. (Vulgar.)
- 16—Consumption pulmonaire. (Fr.) cf. 65.
- 17—Consumcioun. (1450—Trevisa's Barth. De R. P., VII, XXX, 1.)
- 18—Consumpcion. (1494—Fabyan. Chron., VII, 437.)
- 19—Consumpeyon. (1450—Trevisa's Barth. De R. P., VII, XXX, 249.)
- 20—Consumption. (1651—Witte, tr., Primrose's Pop. err., II, 88.)
- 21—Consumptions. (1578 — Lyte. Dodoens, L, XLIX, 71.)
- 22—Consunzione. (Ital.)
- 23—Crewels. cf. 75.
- 24—Cyrneles. (1000—Sax. leechd., III, 62.) cf. 75.
- 25—Decline. (Popular)
- 26—Dépérissement. (Fr.)
- 27—Dust phthisis. Not tubercular.
- 28—Ecrouelles. (Vulgar French.) cf. 75.
- 29—English consumptions. (1732—Arbuthnot. Aliments, rules of diet. 386.)
- 30—Escroeles. cf. 75.
- 31—Escrófula. (Sp.) cf. 75.
- 32—Escrofulosis. idem.
- 33—Escrofulismo. idem.
- 34—Excrementious humours. (1634—T. Johnson. Parey's Chirurg., XIX, 27.) cf. 75.
- 35—Fibro caseous tuberculosis. Usual form of pulmonary tuberculosis.
- 36—Fibroid phthisis. cf. 35, 37.
- 37—Fibroid tuberculosis. idem. Areas of lungs converted into fibrous masses, which are really scars of previous disease, that has undergone nature's cure. cf. 35, 36.
- 38—Foulness of the bone. (1655—Culpepper. Riverius, II, XV, 89.) cf. 12.
- 39—Fressende flechte. (Ger.)
- 40—Galloping consumption. cf. 2, 4.
- 41—Gangole. (Ital.) cf. 75.
- 42—Gavine. idem.
- 43—General tuberculosis. cf. 4.
- 44—Hectisie. (Fr.)
- 45—Humeurs. (Fr.) cf. 34, 53, 75.
- 46—Intestinal tuberculosis. (1893—Syd. soc. lex.) cf. 54, 108, 111.
- 47—King's evil. (1670—Phil. trans., V, 2080.) cf. 75.
- 48—Kinges Euill. (1625—Lodge. Poore mans talentt., 1881, 13.) ibid.
- 49—Knochenfrass. (Ger.) cf. 12.
- 50—Kyrnelles. (1541—Copland, tr., Guydon's Quest. chirurg.) cf. 24.
- 51—Lungenschwindsucht. (Ger.)
- 52—Lupum. (1400—Lanfranc's Chirurg., 208.)
- 53—Lupus. (1590—Barrough. Meth. physick., 331.) Of the skin, var.—erythematosus (?) and vulgaris.

- 54—Peritoneal tuberculosis. (1893—Syd. soc. lex.) cf. 46, 108, 111.
- 55—Phthisie. (Fr.)
- 56—Phthisis. (*Φθίσις*) = wasting, (Gr.) Hippocrates. (1543—Traheron, Vigo's Chirurg., 1586, 448.)
- 57—Phthisis pulmonaria. (1857—Dauglison. Med. lex.)
- 58—Phthisis vesicae. (1846—G. E. Day, tr., Simon's Anim. chem., II, 92.)
- 59—Phthisis.
- 60—Pthisis.
- 61—Ptisike. (1450—Trevisa's Barth. De R. P., VII, XXX.)
- 62—Ptism. (1527—Andrew Brunswyke's Distyl. waters. Dj.)
- 63—Ptisym. (1525—tr. Brunswyke's Surg. 1., IIJ, b/2.)
- 64—Pulmonary consumption. (1727—41. Chamber's Cycl.)
- 65—Pulmonary phthisis. (1873—Green. Introd. pathol., ed. 2,300.)
- 66—Pulmonary tuberculosis.
- 67—Pulmonia. (1844—W. Irving. Life and letters, 1866, III, 320.)
- 68—Schrophula (1694—Salmon Bates. Dispens. 1713, 411/1.)
- 69—Schwindsucht. (Ger.)
- 70—Scrofula. (1843—Graves. Syst. clin. med., XX, 248.)
- 71—Scrofellas. (Popular Latin.)
- 72—Scrofelles. (1000—Sax. leechd., III, 62.)
- 73—Scroffles. (1576—Baker. Jewell of health, 1597, 144.)
- 74—Scrofolia. (Ital.)
- 75—Scrofula. Of the lymphatic glands.
- 76—Scrofulæ (1670—Phil. trans., V, 2080.)
- 77—Scrofules. (Fr.)
- 78—Scrofulous swellings.
- 79—Scrofulus.
- 80—Scrophula. (1791 — Boswell. Johnson.)
- 81—Scrophulas. (Lanfranc. Chirurg., 207.)
- 82—Scrophulæ. (1625—Lodge. Poore mans talentt, 1881, 13.)
- 83—Scrophule.
- 84—Scrophules. (1483 — Caxton, Golden legend. 243/4.)
- 85—Scruphules.
- 86—Scrufulose. (Ger.)
- 87—Scurffyls. (1400 — Lanfranc. Chirurg. 19.)
- 88—Skorphillys. (1400-50. Stock. Med. ms. 41.)
- 89—Skrofeln. (Ger.) cf. 75, 86.
- 90—Skurfula.
- 91—Struma. see Scrofula.
- 92—Strume. (Fr.) cf. 91.
- 93—T. B. (Vulgar.)
- 94—T. B.'s. (Vulgar.)
- 95—Tabes. (Formerly applied also to locomotor ataxia.)
- 96—Tabes mesenterica. Of the glands in the abdomen.
- 97—Yaxotka. (Russian) Tchachatka.
- 98—T'isichezza. (Ital.)
- 99—Tisi. (Ital.)
- 100—Tisis. (Sp.)
- 101—Tisik. (1400—Lanfranc. Chirurg., 164.) cf. 56.
- 102—Tissick. (1607—Topsell. Four. f. beasts., 1658, 536.)
- 103—Tissicks. (1656—Earl. Monm., tr., Bacalini's Advts for Parnas., 41.)
- 104—Tuberculose. (Fr.)
- 105—Tuberculose pulmonaire. (Fr.) (Ann. de l. inst. Pasteur. XIX, 10.)
- 106—Tuberculosis. (1860—Tanner. Pregnancy, II, 48.)
- 107—Tubercular cerebral meningitis. cf. 3, 10, 110.
- 108—Tubercular peritonitis. cf. 1, 54, 111.
- 109—Tuberculous adenitis. (1899—B. med. j., Aug. 19, 1899.)
- 110—Tuberculous meningitis. cf. 3, 10, 107.
- 111—Tuberculous peritonitis. cf. 1, 54, 108.
- 112—Tysyc. (1551—Turner. Herbal., I, Fiv., b.)
- 113—Tysyk. (1340—Hampole. Pr. consc., 701.)
- 114—Wasting disease. (Popular) cf. 25.

References to early English literature from Murray's New English Dictionary.

COMPARATIVE STUDIES OF DIPHTHERIA CULTURES OF LOEFFLER'S MEDIUM WITH THE ORIGINAL SWABS TRANSPORTED BY MAIL

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Read before Laboratory Sections, American Public Health Association, at San Francisco, Cal.,
September 13, 1920.

Swabs and cultures prove to be of equal value for diphtheria diagnosis while swabs may give evidence of other infections. This paper tells of an experiment in routine work lasting a year. It shows swabs to be less costly, never dry through storage, and better for surveys. The paper emphasizes the need of rural branch laboratories.

FOR many years it has been the practice of state health departments and city boards of health to send out Loeffler's culture media for the collection of material for the diagnosis of diphtheria.¹ It has been considered bad practice to ship the original swabs to a laboratory for diagnosis. We have always supposed that desiccation and the lack of food greatly reduced the viability of the Klebs-Loeffler bacillus. When we took over the diagnostic work of the Michigan Department of Health, the sending out of swabs to doctors and health officers was the routine procedure. As a matter of administration, the question of change was immediately brought up. While considering the problem, our diagnostic results were so satisfactory that we thought it advisable to make a rather careful study of the swab as a means of transporting cultures from throats. The distribution and storage of outfits in homes of physicians and health officers and the expense to our organization were discussed. The time element in reporting laboratory examinations was also considered. The time in transit and

viability of organisms on swabs and culture media were compared. We soon observed that it was possible under the conditions with which we were working in Michigan to make diagnoses of infections other than diphtheria on swabs sent to the laboratory.

We adopted as a routine procedure the following: Immediately upon arrival at the laboratory, a smear is made from the diagnostic swab. All swabs are streaked on blood plates (media 1.5 agar, neutral to phenoptalein, 5% human blood) and cultured on Loeffler's blood serum. After 16 to 24 hours incubation (depending upon growth and mail arrivals) smears are made from culture tubes and stained with alkaline methylene blue. The plates are studied for the different groups of streptococci and for the growth of Klebs-Loeffler bacilli. (See Table 1 routine cultures, August 1, 1919, to August 1, 1920.) From 11,104 swabs submitted for diagnosis we returned 1182 positive diphtheria diagnoses and 2572 positive hemolytic streptococci diagnoses. In 189 cases Klebs-Loeffler bacilli were demonstrated in direct smears from swabs which were one to four days in transit. In our routine examination of diagnostic

¹Report State Board of Health. Minnesota, 1899-1900. F. F. Westbrook, M. D. p. 594.

swabs Vincent's angina was reported in many instances.

We introduced the use of the blood plate, for the prevalence of streptococci infections at the army camps led us to believe that soldiers returning to civilian life would in many instances be carriers of virulent streptococci.² This procedure resulted in collecting valuable information on the seasonal prevalence of certain strains of streptococci and their etiological significance. The practice of making a blood plate at the time the Loeffler's was inoculated not only differentiated septic sore throat, but saved a day in the isolation of the diphtheria bacillus for virulence tests and gave a check upon the Loeffler's media, for in many cases the Klebs-Loeffler bacillus was recovered from the plate when the Loeffler's media was negative.

The blood plate in conjunction with the Loeffler's demonstrated the interesting fact that many strains of *B. Diph-*

theriae had the power of hemolyzing blood. The limited literature on this subject indicated that the power of hemolysis was associated with virulence.³ As yet we have not been convinced of this, for hemolytic diphtheria bacilli have been recovered from carriers and in one instance an avirulent hemolytic diphtheria bacillus was isolated from a suspected contact carrier.

In view of the possibilities for the use of the swab for diagnostic work other than diphtheria, we wished to continue the use of the swab if it gave comparable results with cultures shipped on media. In order to draw intelligent conclusions, we arranged for a group of cultures to be taken from known diphtheria cases, both the swabs and the cultures being sent to the laboratory for

²A Symposium on Streptococcus Hemolyticus Carriers. Annals of Otolaryngology and Laryngology. June, 1919.

³The Bacteriology of Diphtheria. G. H. Nuttall and G. S. Graham-Smith. p. 229.

TABLE I
Routine Cultures, August 1, 1919, to August 1, 1920

Month	Swabs Submitted for Diagnosis					Swabs Submitted for Diagnosis and Release Showing B. Diph.									
	Hemo. Strep- tococcus +	Hemo. Strep- tococcus —	Total Strepto- cocci Diagnoses	B. Diphtheria +	B. Diphtheria —	Total Diag- nostic Swabs	Time in Transit					Swabs positive for B. Diph- theria on arrival			
							1 day	2 days	3 days	4 days	5 days	Number	Days in Transit		
August	14	149	163	43	11	217	69	4	..	..	..	11	1 day
September	38	110	148	58	62	268	63	21	3	..	..	3	2 days
October	76	181	257	181	1002	1440	134	47	16	..	..	14	1 day
November	35	212	247	212	1382	1841	240	35	7	..	2	9	2 days		
December	213	331	544	105	146	795	100	36	12	3	1	1	3 days		
January	566	1441	2007	190	99	2296	107	92	10	5	..	23	1 day		
February	502	511	1013	40	22	1075	57	12	3	2	1	2	2 days		
March	530	366	896	49	11	956	33	15	5	8	..	1	4 days		
April	220	160	380	65	10	455	67	5	4	..	..	4	1 day
May	126	216	342	55	12	409	68	19	..	3	..	2	2 days		
June	112	117	229	80	39	348	85	49	5	3	..	3	1 day		
July	140	440	580	104	....	684	85	35	4	..	..	4	2 days
Total	2572	4234	6806	1182	2796	10784	1108	370	69	24	4	190	1 day		
													2 days		

comparative examination. Dr. R. W. Pryer, Director of Laboratories for the Detroit Department of Health, agreed to furnish from the Herman Kiefer Hospital a series of 148 cultures for this study. Two swabs were taken from the cases at the hospital. Two Loeffler's tubes were inoculated from one swab. The other swab was mailed to the Michigan Department of Health at Lansing, with one of the inoculated cultures. The other culture was incubated at the hospital and examined after ten hours incubation. The technique of handling each group of cultures was varied according to condition of growth upon receipt. (See Plate 1.)

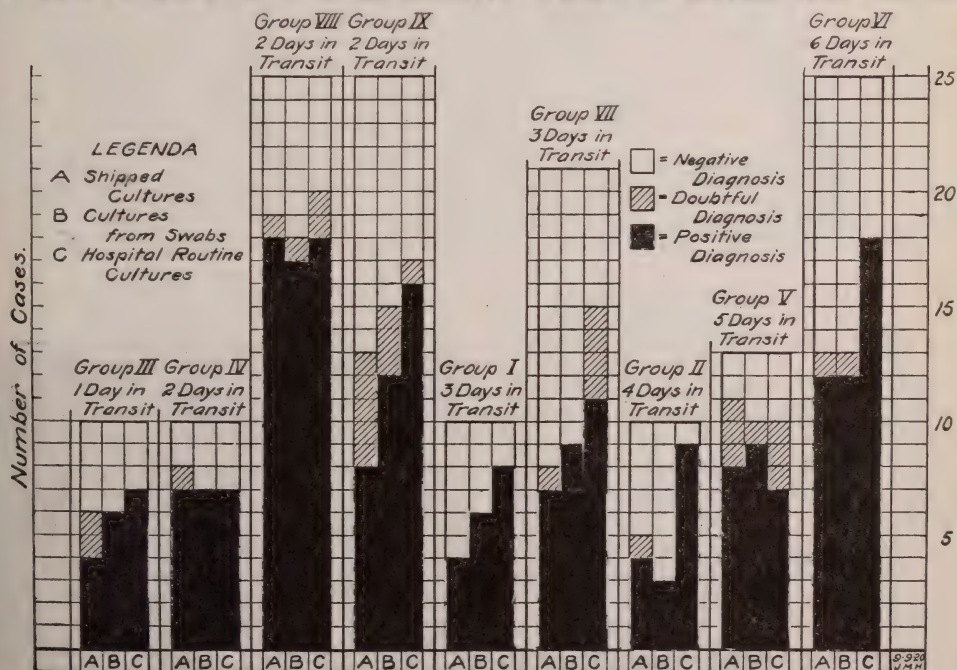
A diagnosis was made in 18 hours upon both swabs and cultures in Group III which was 24 hours in transit. Group IV was 48 hours in transit and cultures showed no growth on arrival. Diagnosis was made in 23 hours on both swabs

and cultures. Groups VIII and IX were 48 hours in transit. Diagnosis was made on cultures on arrival, on swabs at the end of 18 hours. The diagnostic value of the cultures, however, was less than that of swabs as shown by pictogram. The 3 day groups were VII and I. The cultures were examined on arrival and were not equal in diagnostic value to the cultures from the swabs. Cultures from Group II, four days in transit, showed scant growth on arrival and after incubation. The viability of organisms was practically the same on swabs and culture media. The 5 and 6 day groups showed marked overgrowth, but swabs and culture media had about the same diagnostic value.

As illustrated by tabulation of routine cultures, a large proportion of our swabs are one day in transit, and a very small per cent exceed two days. Since we observed in our work with the Detroit

Plate I

A COMPARISON OF THE DIAGNOSTIC VALUES OF SWABS AND CULTURES.



Health Department that growths on cultures, one or two days in transit, were either absent or very scant, it would be necessary to incubate all cultures before diagnosis could be made. Consequently we would save no time in substituting culture media for swabs. The results of this study show the swab to be fully equal in number of positive diagnoses to the shipped culture. Neither the shipped culture nor the swab gave as many positive diagnoses as were obtained by immediate incubation at the hospital. One hundred and forty-eight different diphtheria cases is, of course, a relatively small group, but sufficient, we believe, to illustrate these points, as we had some of the cultures and swabs in transit as many as six days. It should be noted at this point that a central state laboratory is very greatly handicapped in making a diagnosis on which to base treatment. Examination of mailed cultures should be primarily for public health administration, *i. e.*, the control of releases and the isolation of carriers. Until branch laboratories have been established in rural districts, it will be necessary for physicians to give antitoxin on clinical diagnoses, as even twenty-four hours in transit is too long to wait for a positive diagnosis on which to base treatment.

CONCLUSIONS

1. The diagnostic value of swabs and culture media for diphtheria is equal.

2. The swab has additional diagnostic value for other infections, notably septic sore throat and Vincent's angina.

3. There is no particular saving in time of diagnosis.

4. The swab reduces the dangers of contaminated cultures one-half, for inoculations are made under more favorable conditions in the laboratory.

5. The swab eliminates the use of dry or contaminated media that has been stored in the doctor's office.

6. The use of the blood plate gives duplicate cultures.

7. The blood plate saves one day in the isolation of the organism for virulence test.

8. The swab is more practical in school surveys.

9. Our procedure permits of the use of improvised swabs.

10. Not the least of factors that have influenced us in continuing our use of the swab is the cost. Our records show that we sent out during the year July 1, 1919, to June 30, 1920, approximately 23,000 swabs and had returned approximately 14,000, showing a loss of 9,000. Had we lost 9,000 swabs and 9,000 tubes of culture media, it would have amounted to a loss of \$540.00 to the organization.



MAKING AN ACQUAINTANCE

Readers of the JOURNAL have already seen how the public health nurse makes herself welcome at the houses of the people. A third picture in this series furnishes information as to how she approaches the children. Here is a little one, evidently of foreign parentage, who is quite ready to be friends. These photographs were furnished through the courtesy of Florence Swift Wright, whose recent untimely death was a shock to all who knew her.



One of the striking conceptions of the Child Health Organization carrying health precepts not only to the kiddies, but to sober, serious grown-ups.



THESE ARE *the* RULES *of the* GAME

A full bath more than once a week.

Brushing the teeth at least once every day.

Sleeping long hours with windows open.

Drinking as much milk as possible, but no coffee or tea.

Eating some vegetables or fruit every day.

Drinking at least four glasses of water a day.

Playing part of every day out of doors.

A bowel movement every day.

CHILD HEALTH ORGANIZATION OF AMERICA..
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THE HEALTH CENTER

The health center movement is a plant of exceedingly recent growth. Wherever it may have originated, the fundamental idea is so practical that everyone who heard of it recognized its value, and in many different places it was seized upon as affording a solution for existing difficulties. With the initiative and energy characteristic of Americans the idea has been developed, and that other American characteristic, invention, has given it many different forms. These are set forth somewhat in detail in the different articles in the symposium in this issue of the JOURNAL. It will be seen from them that the health center idea covers a variety of administrative methods that range from the simple clinic to the assumption of almost the entire duties of a health department; beyond this into the coördination of local health agencies which until now had been pursuing each its own independent method with more or less success and efficiency; and beyond this, even, to an active agency in prevention through health education of the people.

Early in 1919, the Health Department of the State of New York recognized the potentialities of the health center and in a special issue of its bulletin, *Health News*, presented plans for a municipal health center, together with the history of the movement in the state and the experiences of various cities which had been independently developing their own centers. It offered to help communities in the planning of health centers adapted to their own special needs.

Since that time Norfolk's plans have been formulated, and the drawings of a remarkable future health center are more or less familiar to health administrators. Like the civic center which brings together the executive offices of a city in convenient and architecturally attractive structures, so the Norfolk public health

center plans to bring together in a square of the city the activities relating to health and public welfare. Six important buildings are in this plan; one for administration, one for general medical purposes, a prenatal building, an emergency hospital, a juvenile courthouse and a detention home. The site has already been secured, some progress has been made in the way of construction. This is indeed an ambitious project for a population of not more than 200,000, but illustrates one development of the idea, that of a community believing in the value of good health.

On the West Coast, Alameda County has established its public health center in Oakland, temporarily housed in a building of attractive exterior formerly devoted to medical purposes. Public interest has been excited, however, to the extent of the purchase of a city block in the civic center of the community, and the securing of funds for the erection of a modern building is under way. This is the undertaking of a population of about 350,000, some details of which were set forth in *Modern Medicine* for August, 1920.

A definition of health center, which comes to the JOURNAL from a correspondent in Iowa, declares it to be a "place at which there is institutional health work, such as diagnosis, treatment or dispensary service; at which there is impartible knowledge of the health resources of the community; from which there proceeds out-patient health work such as visiting nursing; all of these services being given either without charge or at such nominal rates as to render them available to the general public." This was a good definition not long ago, but mark how the aspect has quickly changed. In its setting forth of what a health center should be, the American Red Cross now defines it as "an institution from which health radiates rather than an institution to which disease gravitates." Prevention in modern therapy seeks to shut the stable door before the horse has bestirred himself and the modern health center is bound to aid prevention by informing the people of the fact that the door may be shut and telling them how. It stands for team play by many active organizations and should be able to focus on health education the brains of the twentieth century. At the same time it does not forget those who are ill and need the benefits of medical attention.

LET US STOP GUESSING IN HEALTH WORK

It is worth while for health officers to cast an eye over the article entitled, "The Evaluation of Health Activities" by Dr. Charles V. Chapin in the December, 1920, issue of the *Health News*, the monthly bulletin of the New York State Department of Health.

Such evaluation of health functions does not come as a new subject, for it is one that is suggested every time a health officer attacks the annual problem of estimating his budget, but the close consideration of the matter by a health administrator with the experience of Dr. Chapin is always worth while. So rapidly does the point of view change that the technic of yesterday may be below the best scientific standards of today, and yet the supporting public be only in the thought of the day before yesterday.

Dr. Chapin has accomplished the useful service of reducing to figures his evaluations and supporting these by reasons. He makes no claim for perfection; he asserts his values to be tentative, but at the same time it will be an excellent

3. Education of public	80
4. Vital statistics	70
5. Coördination of extraneous health agencies.....	60
6. Concurrent disinfection	60
7. Infant and maternal welfare work.....	60
8. Public health nursing	50
9. Control of water supplies.....	40
10. Inspection and control of milk supplies and dairies.....	40
11. Occupational disease: Prevention and control.....	40
12. Medical inspection of school children.....	40
13. Mental Hygiene	30
14. Control of various preventable diseases.....	30
15. Clerical work	30
16. Sewage disposal	30
17. Attendance at conferences	30
18. Food and meat inspections	10
19. Inspection of public buildings	10
20. Terminal fumigation	5
21. Investigation and abatement of nuisances.....	5
	<hr/> 1,000

To a considerable extent the three ratings are comparable. For example, here are a few items:

	Chapin	N. Y.	U. S. P. H. S.
Public health education	80	100	80
Vital statistics	60	90	70
School inspection	80	85	40
Food and milk inspection	30	80	50
Water supply	0	90	40
Sick poor	50	0	0
Special work	0	35	0
Occupational disease	0	0	40

The comparison is of instant value in showing agreements and variances of opinion among the expert. There are certain matters like public health education that everyone today considers of high value. School medical inspection is valued more highly by local officials than by Government men, while the last three items exhibit each one a factor the importance of which has impressed itself on one of the experts but not on the others. Dr. Chapin believes that the sick poor under the care of a civil board are likely to receive a minimum of attention, whereas they may be a health risk to the community, and should be cared for by the health department; Dr. Brooks believes in an open mind towards new and promising suggestions; while Dr. Olesen has had brought to his attention the value of prevention of occupational diseases.

Such discussions as these show that another of the haphazard methods in health administration is under consideration and the experience of the past leads to hope that this important question of the rating of health department activities will be widely and systematically discussed.



See JOURNAL for April for Symposium on Health Measures in Universities. Symposium on Mental Hygiene will follow in another issue.

WILLIAM CRAWFORD GORGAS

SO much has been written about the life and work of General William Crawford Gorgas, that whatever the writer may say will be much like repeating in new words, facts that are already well known.

Intimacy with such a man does not always lead to ease in speaking or writing of his personality or of his work, for there may be feeling that represses rather than causes an easy flow of words.

Intimate association for more than 13 years, with this, the most knightly man that I have ever known, leaves me when I hear others speak of him, almost dumb. I listen, I think of him, of the great things he has accomplished, and accomplished in the face of opposition and of a disbelief in him and in his methods, and finally of the acknowledgment by many of these who had opposed him that he was right,—of the adoption of his methods by men and nations, of the lives he has saved, of the men yet unborn who because of his teachings will be conserved to the world, and finally of his end, while he was yet able to give to the world a service that would benefit mankind.

He was freeing the world from yellow fever, a disease that has taken its toll from both hemispheres, that has been epidemic for centuries in Central and South America and in the West Indies; a disease that has paralyzed commerce and has caused panic and disaster in the Southern States; a disease, which as a result of the practical application by General Gorgas of the discovery by the Reed Board that yellow fever is transmitted by a mosquito, and by only one mosquito, the *Stegomyia fasciata*, is now confined to a few endemic and epidemic centers, and which in five years will be eliminated from the earth.

General Gorgas was born at Mobile, Alabama, October 3, 1854, the son of General Josiah and Amelia Gayle Gorgas. He was educated in private schools

until he entered the University of the South, graduating with an A. B. degree in 1875. Deciding to study medicine, he entered Bellevue Hospital Medical College, graduating in 1879. He served as an interne, 1878-80, and was commissioned as a First Lieutenant and Assistant Surgeon in the Army, June 16, 1880. His first assignment to duty was at Ft. Clark, Texas. In the fall of 1882 he was ordered to Fort Brown, Texas. Here he had his first professional experience with yellow fever, then epidemic on the Mexican Border. This experience with this scourge so early in his career largely influenced his future. The mystery of its spread and its deadly nature appealed to his imagination, and he lost no opportunity to study this disease, and such opportunities were not infrequent for those who served at any of the stations located in the Gulf States, where yellow fever was from time to time epidemic. His cases were always carefully observed. Methods of treatment, hypotheses regarding the transmission of infection from man to man, and the various methods proposed for the control of epidemics, were studied and tested. All that he learned, or a supposition disproved, was a stimulus for greater effort. Further observation was temporarily interrupted in the Fall of 1884 by reason of his transfer from Fort Brown to Fort Randall, Dakota.

On June 16, 1885, he was promoted to the grade of Captain and Assistant Surgeon. On Sept. 15, 1885, he married Miss Marie Cook Doughty of Cincinnati. Opportunity to resume the study of yellow fever came with his transfer to Fort Barrancas, Fla., where he served, with the exception of an 18-month tour of duty at Fort Reno, until the war with Spain. Shortly after the outbreak of the Spanish-American war he was appointed Major and Brigade Surgeon. A vacancy in the regular service permitted of his promotion July 6, 1918, to the grade of

Major and Surgeon in the regular establishment.

General Gorgas went to Siboney on the Hospital Ship Relief, and was present during the entire Santiago campaign. He established and was in command of the yellow fever hospital at this place. He was invalided to the States after the occupation of Santiago, because of a severe malarial infection. After convalescence, he returned to Cuba, and was made Health Officer of Havana.

Here yellow fever was epidemic as it had been almost continuously since 1620. Havana was cleaned, one might say scrubbed and disinfected, but yellow fever remained. Case after case was found. No method tried served to lessen the incidence of the disease. The Reed Board was investigating theories advanced regarding the etiology of that disease. Their work was notable in proving that none of the etiological factors claimed by their sponsors was the true cause of the disease. The claim put forward by Dr. Carlos Finlay in 1881, that the *Stegomyia fasciata* was the agent by which the yellow fever virus was transmitted from man to man alone remained. On Feb. 6, 1901, in a paper read before the Pan-American Congress at Havana, a skeptical world was told that the theory of Finlay was a proven fact. There were many who questioned the findings of the Reed Board, but their experiment had been so carefully controlled and conducted with such mathematical precision that those who questioned succeeded in only confirming the accuracy of the findings. The elimination of yellow fever could now be undertaken on a definite basis, that of the control of *Stegomyia* breeding and reducing the *Stegomyia* index below a point capable of supporting an epidemic. Here was the opportunity that General Gorgas had been looking for, and hoping for, for years.

The eradication of the disease was simple in theory, but in reality, a task of magnitude. It meant house to house inspection, the location of all breeding

places, the listing for future reference of all cisterns, tanks, wells, waterbarrels, fillers, water jars, in fact every container that would hold water and in which *Stegomyia* would breed. It meant the mosquito-proofing or the destruction of all possible breeding places. There were no trained inspectors for the work. They must be trained, while on the job. These inspectors were not kindly received; they were looked upon with suspicion, and their presence was resented. They had to fight ignorance and prejudice and meet the hostility of the householder with forbearance, tact, and judgment, a trying and thankless task.

The containers were found; the cisterns, tanks, wells, etc., either destroyed or made mosquito proof. Houses had to be fumigated to kill infected mosquitos, for the *Stegomyia* is a long-lived insect and once infected is infectious to man for as long as she lives. The task was accomplished; yellow fever was eliminated from Havana. The last case was reported on September 28, 1901.

Malaria was a disease that also took a large toll from those living in certain sections of Havana. The fact recently proven that certain of the *Anopheles* mosquitoes were responsible for the transmission of the malarial parasite from man to man was utilized. So hand in hand with the elimination of yellow fever from Havana went the reduction in the incidence of malaria. The measures against *Anopheles* finally reduced the malarial index to an almost negligible quality, and made healthful areas of what for generations had been uninhabitable.

The work of General Gorgas at Havana was so notable, that Congress showed the appreciation of the whole country, when on March 9, 1903, an act was passed promoting him to be a Colonel and Assistant Surgeon General. Having completed his work in Havana he was assigned to duty as Chief Surgeon of the Department of the East, with station at Governors Island, and re-

mained there until he was appointed Chief Sanitary Officer of the Panama Canal by President Roosevelt, March 1, 1904. Here was a task worthy of the man and a man equal to the task.

There were many natural difficulties to overcome, and much opposition both active and passive to meet. There was disbelief in the fact that yellow fever and malaria were transmitted by mosquitoes. This resulted in disbelief in the man and in his methods. In those early days a man less determined would have been not only discouraged but dismayed. His removal was desired; his recommendations held up and criticised, even characterized as "wild." All this did not hasten the accomplishment of the task but rather delayed it. The vicissitudes of the Department of Sanitation during this period are a matter of history as any one interested may see by reading the "Report to the Government, by Dr. Chas. A. L. Reed. Showing how the Commission makes Efficient Sanitation Impossible," published in the *Journal of the American Medical Association*, March 11, 1905, p. 812; also the "Reply of the Commission to the charges made in the Report to the Government by Dr. Chas. A. L. Reed," published in the same *Journal*, April 1, 1905, p. 1052. The fact remains that after this report matters affecting sanitation received more consideration, and recommendations were more promptly acted upon than previously. President Roosevelt with his usual keen understanding of men and methods was the force that upheld General Gorgas during those trying days and made success possible.

Malaria, yellow fever and dysentery, were the three diseases that caused the greatest morbidity and mortality among employees of the French Canal Company and the natives on the Isthmus. The climate was considered deadly, the whole region had a most sinister reputation. The "Forty-niners" crossing the Isthmus had died in great numbers. Fevers

and dysentery during the period of the construction of the Panama Railroad had taken an enormous toll from the forces employed. It has been stated that each cross tie represented a life sacrificed in the construction of the railroad. One town on the line of the Canal was said to have derived its name, Matachin, because of the awful mortality of the Chinese laborers quartered there. Neither of the statements are strictly true; they are quoted for the purpose of emphasizing the awful unhealthfulness and evil reputation of the Canal Zone and the cities of Panama and Colon, the regions that must be made healthful.

The death rate of the employees of the French Canal Company has never been known with any degree of accuracy, all statistics being based on the deaths that occurred in hospitals only. The hospitals received patients sent in by contractors or the individuals who entered on their own responsibility. Under the French there was no free general hospitalization of employees as during the construction of the Canal by the United States. Because of this lack of general hospitalization, deaths occurring on the line of the Canal and in the cities of Panama and Colon never appeared in the statistical tables of the French Company. The hospital rate of 65 per 1,000 per annum is given as the rate of deaths for employees of the French Company, and it is on this basis that all comparison of French and American statistics are based. The French rate of 65 per 1,000 per annum was high enough to be embarrassing, but a competent observer who lived in Panama during the days of construction by the French and who was in a position that gave him an intimate knowledge of actual conditions told General Gorgas that the French losses were not less than 250 per 1,000 per annum. Allowing that a death rate of 250 per 1,000 per annum is too high, the rate of 65 per 1,000 is undoubtedly too low. The true rate will never be known. It was so high, however, that only by great

effort was it possible to keep the working force recruited up to a point of efficiency, that is, to obtain the average output with the equipment provided.

Many instances are recorded of the almost extinction of groups of employees arriving from France, who being assigned to various stations, took up their work with enthusiasm in the expectation of great accomplishments, but within two or three months 75% would have died, and in some cases even 100%. The death rate among the Catholic Sisters who controlled the hospitals was appalling. Travelers crossing the Isthmus did so at great risk, especially those who from necessity spent the night in either Panama or Colon.

The problem was to make this pest-ridden country a place where men could live at least in comparative safety, especially men from a temperate climate. In fact it was more than this, for in order that these men might be contented and efficient, it was deemed advisable that they should bring their families. If the Canal Zone and the cities of Panama and Colon could not be made healthful to a degree that it would be possible for Americans to live there, the project would have been handicapped by great mortality and increased cost in time and money. Without proper sanitation the great sacrifice of lives would have had its reaction on public sentiment, making probable again the abandonment of the project.

It is estimated that had French conditions persisted instead of those established by General Gorgas, the cost in human lives would have been not less than 20,000.

Those who opposed General Gorgas most strenuously during the early days of his work on the Zone, from an honest disbelief in his methods, methods based on the transmission of yellow fever and malaria by mosquitoes, later acknowledged their error. I heard one former official say to General Gorgas that they had been wrong, and that had their

action resulted in his removal, as they desired, a great calamity would have resulted.

Statistics are as a rule uninteresting, but no one can fail to feel a real interest in the statistical tables published by the Department of Sanitation, Isthmian Canal Commission. These statistics tell the story of a lessening number of deaths, the story of a decreasing sick rate, and fewer days spent in hospitals, all this with an increasing population;—a saving that paid, and more than paid, for all the moneys charged against the Department of Sanitation. The cost of sanitation has been criticized, but no attention has been paid the credit side of the ledger. Is it not proper to credit sanitation with the lessened sick rate and the lives saved? Divide the cost of sanitation by the one item of lives saved, the answer will be an answer to critics. There are other credits that may be considered that directly and indirectly bring their return to the United States. What of the great object lesson in sanitation—a lesson learned by the rest of the world? Other countries applied the methods practiced by General Gorgas. Especially did South America begin to “clean up.”

Sanitation, the same as that practiced in Cuba and on the Canal Zone, freed some of the greatest ports of South America from yellow fever, and reduced the incidence of malaria: it made travel safe; it lessened quarantine restrictions, and in some instances caused the entire removal of all quarantine, results that were of great benefit to trade.

General Gorgas taught the world that the tropics were not of necessity the deadly region they had always been considered; that with proper methods, those diseases, fatal to the native as well as the man from the temperate climate, could be eliminated, and once eliminated, they would not re-occur unless imported from some infected area. This fact forced unprogressive countries to improve sanitary conditions, to oust yellow fever and malaria. For if those coun-

tries wished to keep up with the commercial development of the world and obtain their fair share of the world trade, they must control communicable disease, if not with the view of conserving life, then from the viewpoint of commerce.

The first three years of General Gorgas' work on the Canal Zone as Chief Sanitary Officer was in a subordinate capacity. The Department of Sanitation was not an independent department, but merely a branch of the Department of Government and Sanitation. On March 1, 1907, President Roosevelt appointed General Gorgas a member of the Isthmian Canal Commission and head of the Department of Sanitation. This was a recognition of results accomplished, a triumph of the man and of his methods. So conspicuous was General Gorgas' success in converting the Canal Zone and the cities of Panama and Colon into a region where the death rate was comparable to that of our healthiest cities, that sanitarians came from all over the world to see and learn; and returned to their homes with valuable data and new ideas. So impressive were his results that he received many invitations to advise corporations and countries on matters of health and sanitation. Two were accepted. The first was an invitation from the President of Ecuador to study the health conditions of Guayaquil, and submit outline plans for the sanitary reconstruction of that city, the principal seaport of the Republic. Almost two months were spent in Ecuador, during which time tentative plans were prepared and recommendations submitted. The plans provided for adequate water supply, sewer system, paving the streets, modification of health laws, and the revision of building regulations, with especial reference to "rat proofing." His general plan was adopted and much work has been done. Guayaquil has for almost two years been free from yellow fever, and malaria incidence has been much reduced. At the time of General Gorgas' visit to Ecuador, the death rate

for Guayaquil was such that the city of almost 90,000 people must be repopulated each 15 years or cease to exist. The result of his visit is that one of the most unhealthy cities of the world is now a city with a death rate comparable to that of other tropical cities of the same size.

In the Summer of 1913, Mr. Samuel Evans, Chairman of the Chamber of Mines, Johannesburg, Transvaal, visited the Canal Zone, to make inquiry in regard to the housing conditions of the laborers and the methods used for the control of pneumonia, a disease at one time epidemic among employees of the Panama Canal. The control of pneumonia was a matter of great importance to the mine owners of South Africa, as the native laborer was very susceptible to that disease, especially the tropical native. Among this class of laborers, pneumonia was very fatal; in fact so high had been the death rate from this cause, that the Bureau of Native Affairs had prohibited the employment in the mines of natives from Tropical Africa. This closed a source that supplied each year about 20,000 laborers. A further restriction of recruiting areas was possible if the incidence of pneumonia could not be lowered. This was a very serious matter, for the mines required over 200,000 laborers on the rolls to keep up the average output. As a result of Mr. Evans' visit to the Canal Zone the Chamber of Mines invited General Gorgas to visit the Rand and investigate conditions with the view of applying the methods that had been so successful on the Canal Zone. The invitation was accepted. General Gorgas sailed from Colon early in October, 1913, for South Africa, and arrived at Johannesburg in November. A preliminary survey of conditions was made. It was soon found that this study would be very much more comprehensive than anticipated, for not only must pneumonia be investigated, but housing, hospitalization, food, tuberculosis, method of recruiting, transportation of recruited laborers to the mines,

and their re-patriation on completion of contract. About three months were spent on this work. A report was submitted and discussed with the Chamber of Mines in open session. Some of the mines that had sufficient "life" to warrant it, adopted General Gorgas' plan. One group of mines employed at General Gorgas' suggestion, a sanitarian, who was given charge of all matters pertaining to health and sanitation. The result justified expectations.

While at Johannesburg, General Gorgas was invited by the Governor of Rhodesia to come to Salisbury, the capital, to give advice as to the control of malaria and discuss the question of black-water fever, the cause of great morbidity and considerable mortality among the European settlers of Rhodesia. Many farms and a few small settlements were visited, much advice given, several public meetings held, as well as conferences with the Colonial health officers and civilian practitioners. All were eager for information and advice.

While at Salisbury, General Gorgas dined one evening with the Governor. When General Gorgas entered the drawing room the Governor advanced and said, "I am glad to see you, General Gorgas." After greeting the Governor General Gorgas said, "You are mistaken, I am a Colonel." The Governor said, "It is you who are mistaken,—you were made a General yesterday." With this he gave to General Gorgas a news bulletin, announcing his appointment as Surgeon General of the Army, with the rank of Brigadier General.

On completion of the work at Rhodesia, General Gorgas returned to Johannesburg, finished his work on the Rand, and in February sailed for Cape Town for the United States, via England. He arrived in New York the last of March, proceeded to Washington and assumed the duties of Surgeon General of the Army.

His policies on assuming this office

were to improve sanitary conditions, build up a reserve of hospital supplies equal to that recommended by the Dodge Commission; reorganize the Medical Reserve Corps, increasing its commissioned personnel to such a point that it would meet the demands of war; to re-organize the Medical Corps upon a basis that had a definite relation to the strength of the Army. These various projects were in process of accomplishment when we entered the World War. The Medical Corps had been reorganized, reserve supplies were in process of accumulation, and there were sufficient officers in the Medical Reserve Corps to meet the first demands of the new army.

On March 4, 1915, he was made a Major General and received the thanks of Congress for service as Chief Sanitary Officer of the Panama Canal.

When the War was declared by the United States against Germany, there were but five officers including General Gorgas on duty in the office of the Surgeon General and about 85 clerks. The force was expanded to more than 200 officers and 1,800 clerks. The Department twice outgrew the quarters assigned and was obliged to move. These moves were accomplished without confusion and with but little delay in the routine of the Department.

During the War, all demands were met, all requisitions filled, a gigantic task accomplished with the minimum delays and maximum efficiency. General Gorgas went to France in the fall of 1918, was present at the battle of St. Mihiel, visited other battle fields, and inspected hospitals and sanitary arrangements of the A. E. F.

He was retired on October 3, 1918, having reached the statutory age limit.

He then associated himself with the International Health Board of the Rockefeller Foundation, of which he was a permanent Director. With the Board he was Director of the Yellow Fever Commission. He spent the greater part

of his time in Central and South Africa, fighting for the elimination from the world of this disease, the accomplishment of which is in sight, there being at this time but few centers where the disease is either endemic or epidemic. On May 8 last General Gorgas sailed from Quebec for England and Belgium, intending in June to go to the West Coast of Africa to investigate past epidemics of yellow fever and to study such cases as might be present at the time of his visit.

He was in Belgium from May 20 to 29 for the purpose of interviewing the Belgium authorities about his proposed visit to the Belgian Congo. He also had an audience with the King of the Belgians, who takes a keen interest in all matters pertaining to health, and especially to tropical sanitation.

During this time the Royal Institute of Public Health, (British) was in session, and the Institute at this meeting bestowed upon General Gorgas the Harbin Medal, awarded for achievements in Public Health. He returned to England on May 29. On the morning of the 31st began his last illness. He was a patient

in the Queen Alexandra Nursing Home for Superior Officers. While sick in hospital he was visited by the King who invested him with the Cross and Star of Knight Commander of the Order of St. Michael and St. George.

General Gorgas died at 1:35 a. m., July 4, 1920.

The Royal Society of Medicine planned a funeral service at St. Paul's, but the British Government determined upon a state funeral. On the morning of July 9, the British Government paid its tribute to the man. The honors paid him in death were worthy of the great benefits he had bestowed upon the world, and of the life he had lived.

With many, "the good is oft interred with their bones." A few men, are for their works blessed by their contemporaries; others are remembered by posterity. Seldom does that man live whose works are blessed by his contemporaries and whose memory will be held in reverence by future generations. General Gorgas was such a man. A great man has gone; there is no one upon whom his mantle can fall.

ROBERT E. NOBLE.

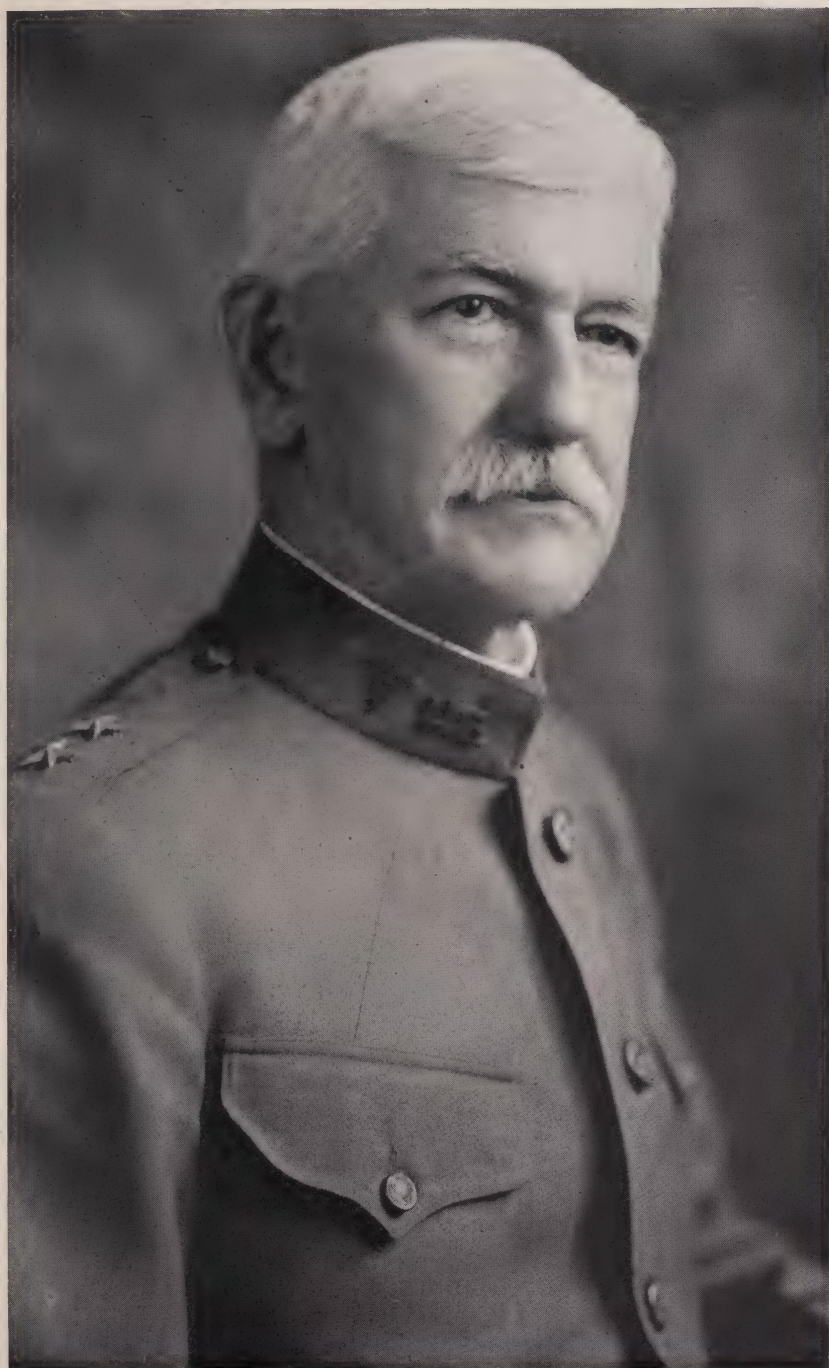
BOOKS AND REPORTS REVIEWED

Public Health and Hygiene. Edited by William Hallock Park, M. D., Professor of Bacteriology and Hygiene, University and Bellevue Hospital Medical College, and Director of the Bureau of Laboratories, Department of Health, New York City. Philadelphia: Lea and Febiger, 1920. Pp. 884. Price, \$10.00.

The time has passed when any one individual can possess the technical knowledge and personal experience required properly to direct and develop all or even several of the different branches of public health work. It is also true that few if any persons can discuss authoritatively more than one or two of these subjects. Dr. Park has enlisted the aid of eminent authorities in the preparation of this work,

each of whom has contributed one or more chapters. It is noted in the preface that the writers have kept in mind that the book is intended for public health officials, physicians and medical students, and each has therefore tried to make his section as practical as possible and to utilize to the full his own personal experience.

A perusal of the table of contents shows that Dr. Park has succeeded in securing the leading authorities to help in the preparation of this book. "Air and Ventilation" by C.-E. A. Winslow, "Epidemiology" by G. A. Soper, "Vitamines" by A. F. Hess, "Personal Hygiene" by E. L. Fisk, "Industrial Hygiene" by L. I. Harris, "Child Hygiene" by S. Josephine Baker, "Public



Health Education" by C. F. Bolduan, "Mental Defectives" by H. H. Goddard, are a few of the topics discussed by persons whose high standing in the public health profession is known to all workers in this field.

The chapter on "Air and Health and Ventilation" by C.-E. A. Winslow is undoubtedly the ablest discussion of this subject extant. The author has brought together in a scholarly manner all the facts bearing on the relation of atmospheric conditions to health and efficiency; the practical methods of ventilation and the examination of the air. Because of the importance of the physiological and economic aspects of food, a chapter is devoted to this subject in which the principles are amplified in order to guide one in directing economies. The preservation and adulteration of food is ably discussed from the practical side. Public health education, the keynote of public health activities, is exceedingly well treated by Dr. C. F. Bolduan, Chief of the Section of Public Health Education in the United States Public Health Service. It is interesting to note that the most recent developments in public health, such as the sanitation of swimming pools, sanitary surveys, personal and mental hygiene each find a place in this book.

The importance of housing to tuberculosis is somewhat magnified. It has repeatedly been demonstrated that tuberculosis is affected only indirectly by the housing situation and that social and economic factors are far more important. The chapters on water supply and sewage disposal are rather sketchy. It is unfortunate that more references to original publications are not given. On the whole, this book is exceptionally well prepared and

students of public health and workers in this field will find it very interesting reading.

D. GREENBERG.

✦

Health Letters is the title of Framingham Monograph No. 8, which presents the effort of the Framingham Community Health and Tuberculosis Demonstration to offer important health lessons to the community in popular form. For the last three years the Framingham *Evening News* has carried on Saturday at least one of these short statements, and together they represent the longest continued effort of the kind towards health education in the community. These letters have attracted much attention, and in response to demands for them, this special monograph has been issued. The letters are short and to the point. They begin with the special consideration of tuberculosis, and discuss in popular fashion such topics as, "How Can We Fight Tuberculosis?" with the reply giving the effect of "your personal efforts and mine" in public hygiene, home hygiene and personal hygiene. Other lessons impress the need of the regular medical examination, the fitness of the nation, and take up question of child hygiene and the value of children's health camps. There is a popular statement with reference to vitamins, and others for summer entitled, "Beating the Heat" and "Vacations." There are discussions of the special diseases, what the child can do, value of the garden, not forgetting a few little quips to provoke the smile.

This little book is privately published, and that its valuable lessons may have the widest field, its price has been set at the very modest sum of ten cents by the Community Health Station at Framingham, Mass.



Take Notice! The Fiftieth Annual Meeting of the A. P. H. A. will be held in New York City, November 14-18, 1921.

ASSOCIATION NEWS

LIST OF NEW MEMBERS

Proposed for Election to the

A. P. H. A.

January 11 to February 9, 1921, inclusive.

Names of Sponsors are set in **Bold Face Type**.

Names of New Members are set in Light Face Type.

ARKANSAS

Mary Ann Abel, Little Rock.
H. D. Cullen, Exec. Sec., Ala. Tuberculosis Assn., Birmingham.

CALIFORNIA

Gertrude Whitton, Berkeley.
Olive M. Willoughby, Teacher of Physiology, Berkeley.

COLORADO

M. O. Shivers, M. D., Colorado Springs.
J. J. Mahoney, M. D., Colorado Springs.
Agnes Paulsen, Denver.
Betsie G. Campbell, R. N., Public Health Nurse, Prairie Grove, Ark.
Mrs. Eda May Pine, Public Health Nurse, Pueblo.

Nell F. Notestine, R. N., Ft. Collins.
E. I. Raymond, M. D., Health Officer, Wellington.

CONNECTICUT

Charles F. Congdon, M. D., Mystic.
Louis M. Allyn, M. D., Health Officer, Mystic.
Prof. C.-E. A. Winslow, New Haven.
L. L. Shapiro, U. S. P. H. S., Washington, D. C.

FLORIDA

A. W. Hedrich, Boston, Mass.
John S. Helms, M. D., Chairman, Bur. Public Health, Tampa.

GEORGIA

T. F. Sellers, Atlanta.
M. A. Fort, M. D., Health Commissioner, Brooks Co., Quitman.
V. H. Bassett, M. D., Savannah.
John R. Deully, V. S., Health Officer, Waycross.

ILLINOIS

E. S. Allen, M. D., Arcola.
J. J. Hopkins, M. D., County Sanatorium Board, Hindsboro.
Arthur Lederer, M. D., Chicago.
M. Val Robinson, M. D., A. A. Surgeon, U. S. P. H. S., Chicago.
John Ritchie, Jr., Boston, Mass.
Stella Becker, R. N., Supt. Visiting Nurses' Assn., Decatur.

IOWA

William S. Sturges, Sioux City.
Stanley D. Beard, Director, Lederle Antitoxin Labs., Pearl River, N. Y.

KENTUCKY

Irvin Lindenberger, M. D., Louisville.
Ben Carlos Frazier, M. D., County Board of Health, Louisville.
A. W. Hedrich, Boston, Mass.
Beulah E. Aulick, Hygiene Teacher, Ft. Thomas.

LOUISIANA

Charles F. Gelbke, M. D., Gretna.
Jefferson Parish Chapter, A. R. C., Atten. Mrs. T. A. Tillotson, Sec., Gretna.

MARYLAND AND DISTRICT OF COLUMBIA

C. L. Alsberg, M. D., Washington.
Mervin W. Glover, M. D., U. S. P. H. S., Washington.

Roscoe C. Brown, M. D., Washington.
Ralph E. Stewart, M. D., Lecturer, U. S. P. H. S., Washington.

H. M. Loomis, Washington.
B. R. Hart, National Cannery Assn., Baltimore.

John Ritchie, Jr., Boston, Mass.
Hugh M. Young, M. D., Surgeon, Johns Hopkins Hosp., Baltimore.

Charles F. Craig, Lt. Col., M. C. U. S. A., Prof. Bacteriology, Parasitology & Preventive Medicine, Army Med. School, Washington.

MASSACHUSETTS

John Ritchie, Jr., Boston, Mass.
Frank J. Beardsley, M. D., Brookline.
Edwin Warren Bullock, M. D., Health Center, Haverhill.

Prof. C. E. Turner, Cambridge.

Harold DeW. Cross, D., M. D., Director, Forsyth Dental Infirmary, Boston.
Henry L. Murphy, Lawrence.
Alfred A. Ellsworth, Braintree.

MICHIGAN

David Littlejohn, M. D., Ishpeming.
Regine White, R. N., School Nurse, Ishpeming.

MISSOURI

M. P. Ravenel, M. D., Columbia.
Simeon Trenner, Dermatological Research Labs., Philadelphia, Pa.
Harry S. Lucas, M. D., Joplin.
J. T. Wharton, M. D., County Supt. of Health, A. A. Surgeon, U. S. P. H. S., Miami, Okla.

NEBRASKA

F. N. Martin, Lincoln.
J. R. Roberts, Dairyman, Lincoln.

NEW MEXICO

John Ritchie, Jr., Boston, Mass.
Don W. Gudakunst, M. D., County Health Officer, Roswell.
C. E. Waller, M. D., Santa Fe.
D. B. Wilson, County Health Officer, Santa Fe.

NEW YORK

H. F. Sennfner, M. D., Albany.
W. Clyde Sykes, Conifer.
Harold B. Wood, A. A. Surgeon, Brooklyn.
Albert Stanley Gray, M. D., A. A. Surgeon, U. S. P. H. S., Brooklyn.

OHIO

Don C. Sowers, Ph. D., Akron.
Arthur O. Bauss, Akron.

PENNSYLVANIA

Lawrence M. Rosenfeld, P. D.
Paul Angstadt, Laboratory Technician, Philadelphia.
John Ritchie, Jr., Boston, Mass.
William F. Plowfield, Sanatorium Specialist, V. D. Lecturer, Reading.

TEXAS

George Parker, Jacksonville.
Ira W. Pickett, District Sanitary Inspector, Pedro Miguel, Canal Zone.

VIRGINIA

Prof. Clarence D. Hart, Williamsburg.
Margaret Murphy, R. N., Public Health Nurse, Mobile, Ala.
Ella Dale, R. N., Public Health Nurse, Montgomery, Ala.
Lula A. Davis, R. N., Public Health Nurse, Jackson, Miss.
Sallie Elmore Lawrence, R. N., Public Health Nurse, New Orleans, La.
Mary E. Simpson, R. N., Public Health Nurse, Clinton, S. C.
Sallie E. Gossett, R. N., Public Health Nurse, Woodside, Greenville, S. C.
T. Bessie Smith, R. N., Public Health Nurse, Spartanburg, S. C.
Sarah E. Shotts, R. N., Public Health Nurse, Del Roy, Alexandria, Va.
Margaret M. Davis, R. N., Public Health Nurse, Culpepper, Va.

WYOMING

C. Y. Beard, M. D., Cheyenne.
Joseph F. O'Donnell, M. D., State V. D. Director, Casper.

CUBA AND PORTO RICO

Jorge Le-Roy, M. D., Havana.
J. E. Lopez-Silvero, M. D., City Med. Dept., Havana.
John Ritchie, Jr., Boston, Mass.
Isaac Gonzales Martinez, M. D., Inst. of Tropical Med. & Hygiene, San Juan, Porto Rico.

CANADA

Helen R. Y. Reid, Montreal, Que.
W. A. L. Styles, M. D., Ex. Sec., Child Welfare Assn., Montreal, Que.

REPORT OF COMMITTEE ON MODEL HEALTH LEGISLATION*

The Committee on Model Health Legislation begs to submit the following report. The committee was appointed in March, 1919, and consisted of Dr. W. C. Woodward, Health Commissioner of Boston, Mass., and lecturer in law at Georgetown University; Dr. C. V. Chapin, Superintendent of Health, of Providence, Rhode Island; Dr. Carrol Fox of the United States Public Health Service; Dr. H. B. Hemenway, District Health Officer in Illinois and author of "The Legal Principles of Public Health"; Dr. W. S. Rankin, State Health Officer of North Carolina; Prof. C. E. Turner of the Massachusetts Institute of Technology, and

Mr. James A. Tobey of the American Red Cross, Washington, D. C. Drs. Woodward and Chapin found it necessary to resign and their places were taken by Dr. F. E. Fronczak, Health Commissioner of Buffalo, New York, and lawyer, and Dr. W. H. Brown, formerly Health Officer of Bridgeport, Conn., now with the Rockefeller Foundation. The Committee has held four meetings: at Boston, Atlantic City, Providence and Washington. The Committee has prepared a model code with notes and references for the organization of a health department and the control of communicable diseases.
January 20, 1921.

MODEL HEALTH CODE

FOREWORD

The following code is presented as a guide for the formulation of a municipal health ordinance. It aims to set up the essential features and fundamentals of the organization of the health department and the control of communicable diseases. The footnotes give explanations and alternative procedures. The person who draws up municipal ordinances should always familiarize himself first of all with the state laws on the subject. The state laws are, of course, superior to the municipal, and no regulation inconsistent with them can be enforced. The charter of the municipality should also be consulted in order to ascertain any powers concerning health regulations contained therein. Since the provisions of state laws on health in this country differ materially with regard to powers conferred on local authorities and the requirements for public health which are laid down, it is not likely that this code can be copied verbatim. The code does attempt, however, to give the correct legal phraseology and to present the most advanced scientific knowledge on the subjects taken up. If this code is copied, the footnotes should, of course, be omitted. At the end will be found references to other model laws and material

which is useful in drawing up health ordinances.

CHAPTER I.

ORGANIZATION OF HEALTH DEPARTMENT

Regulation 1. There shall be a health department in the (City of, Town of) under the direction of a Health Officer.¹ He shall be appointed by the Mayor,² subject to the approval of the state health authorities.³ He shall be subject to removal by the Mayor, but may have a public hearing if he desires. He shall be suitably trained or experienced in public health administration.⁴ He shall devote his full time to the duties of his office.⁵ He shall execute and enforce all statutes, ordinances, and regulations for the protection and promotion of health and shall take such other action as is necessary for the public health. He shall have the power to appoint and remove, and fix the duties of such other employees as are necessary for the administration of the health department.⁶ He shall have the power to fix the salaries of the employees of the health department, subject to the approval of the legislative authorities of the (City of, Town of).⁷

Notes 1. Since there are about 60 titles now being used for municipal health officials, the Committee recommends that the words "Health Officer" be adopted as the standard.

*Reprints of this report will be available at 15c each; five copies for 50c; special prices for larger quantities. Address the Boston office for prices. The type will be held one month for printing special orders.

2. The way in which a Health Officer can be appointed depends upon the form of municipal government. The charter or local ordinances already in force may require other methods. Appointment by the Mayor is considered by the committee as the best procedure, however.

3. The Committee believes it desirable that local Health Officers should be licensed by the state department of health, but the requirements of existing state laws will govern this point.

4. The Health Officer should be a person trained in public health administration; preferably, but not necessarily a physician, and preferably a graduate of a college course in public health. In lieu of this he should have had actual experience in public health work. The Committee believes it desirable that legislation tending to make more permanent the tenure of office of health officials and making provisions that they be secured and kept on the merit system without political interference should be promoted.

5. Where a community is too small or where there are other conditions which make it impracticable to employ a full-time Health Officer, it may be possible to create a district of several communities which can unite in the employment of a Health Officer who will give his full time to the district.

6. The method of appointing employees depends on the form of government. It may be already provided for. The Committee recommends this procedure, however.

7. The Committee is of the opinion that all authority in municipal health should be centralized in the Health Officer alone. As an alternative, there may be a public health council, whose duties are purely advisory. Most municipal laws provide for a board of health, but the Committee believes the best administrative procedure requires one man control.

CHAPTER II.

CONTROL OF COMMUNICABLE DISEASES

Regulation 1: Definitions.⁸

Note 8. The Committee does not believe any definitions are necessary in this model code as it is drawn up. If definitions are desired or considered necessary, the Committee refers to the Report of the American Public Health Association Committee on Control of Communicable Disease. Reprint 436, U. S. Public Health Service, Washington, D. C.

Regulation 2: Diseases to be Reported.⁹

The following diseases must be reported:

- Actinomycosis
- Anthrax
- Cerebro-spinal Fever¹⁰
- Chancroid
- Chickenpox
- Cholera, Asiatic
- Dengue
- Diphtheria
- Dysentery (Amebic and Bacillary)
- Erysipelas
- Favus
- German Measles
- Glanders
- Gonococcus Infection
- Hookworm Infection
- Influenza
- Infantile Diarrhea
- Leprosy
- Malaria
- Measles
- Ophthalmia Neonatorum

- Paratyphoid Fever
- Plague
- Poliomyelitis
- Rocky Mountain Spotted Fever
- Rabies
- Scarlet Fever
- Septic Sore Throat
- Smallpox
- Syphilis
- Trachoma
- Tuberculosis (all forms)
- Trichinosis
- Typhoid Fever
- Typhus Fever
- Vincent's Angina
- Whooping Cough
- Yellow Fever.

Provided, that the Health Officer may at his discretion require other diseases to be reported.

Note 9. The Committee favors the reporting of diseases only when the Health Officer is to take some action on the reports. Under such conditions, or for statistical reasons, pneumonia, cancer, tetanus, bro-spinal meningitis or meningococcus meningitis, to be reported.

10. This term is the best usage for epidemic cerebro-spinal meningitis or meningococcus meningitis, which is the communicable form of meningitis.

Regulation 3. Method of Reporting.

Every physician or other person having knowledge of any person affected or apparently affected with any disease specified in Regulation 2 of this chapter shall report to the Health Officer the following data:

Name of disease.

Full name, age, sex, race and exact address of patient.

Exact occupation, place of employment, or school attended by patient.

Name and address of person making report.

Date of report.

Such report shall be made within six hours after the case comes under observation, preferably by telephone. A specimen sent to the Health Officer for laboratory diagnosis and accompanied by the data given above shall be considered as a report.

The term "other person" as used in this regulation shall mean in the absence of a physician any parent, guardian, householder, keeper of a hotel or lodging house, midwife, nurse, school teacher, superintendent of an institution, master of a vessel, owner or manager of a dairy, or other person having under his care or observation a person af-

fectured or apparently affected with a communicable disease.

Regulation 4. General Measures for Control. The Health Officer or his duly authorized representative shall make such investigation as in his judgment may be necessary to determine the presence or absence of any of the diseases named in Regulation 2 of this chapter and if any such be found he shall adopt such measures as are authorized by law for the prevention of the spread of such disease and for the relief of the patient, and to these ends he or his duly authorized representative may enter any premises where he suspects the presence of any such disease.

Regulation 5. Laboratory Examinations. The Health Officer shall secure material for cultures, or specimens for bacteriological or other laboratory examination to assist in determining the diagnosis whenever in his judgment such procedure is necessary, and any person when requested by him shall permit such specimen to be taken.

Regulation 6. Measures for Control in Schools. The teacher of any school, college, university or Sunday school, having under his care any pupil who appears to be affected by any communicable disease, shall promptly send such pupil home or separate him from other pupils until examined by a physician. The teacher shall report the case in accordance with Regulation 3 of this chapter.

A pupil who has been excluded from a school, college or university on account of having been affected with or exposed to communicable disease shall not be readmitted to school without a permit from the Health Officer except that in the case of the following diseases the pupil shall be readmitted without a permit after the period shown below.

Chickenpox—after crusts have disappeared from skin.

German Measles—7 days.

Measles—7 days from appearance of rash.

Mumps—2 weeks from beginning of attack.

Whooping Cough—2 weeks after appearance of whoop.

In the event of the presence of any disease as specified in Regulation 2 of this chapter, the Health Officer may cause to be examined any pupils, teachers or other persons employed in the schools, and may

take any measures necessary to prevent the spread of disease. All school authorities and employees shall conform to all rules and regulations of the Health Officer for the accomplishment of this end.¹¹

Note. 11. The Health Officer should also inform school authorities of the presence of disease, though this provision need not necessarily be included in this code.

Regulation 7. Methods of Isolation in Various Diseases. Every person suffering from any of the diseases mentioned in Regulation 2 of this chapter shall isolate himself and every person in charge of such a person shall isolate the person of whom he is in charge in the following manner:

When the disease is—

Anthrax	Plague
Cerebro-spinal Fever	Poliomyelitis
Cholera	Scarlet Fever
Chickenpox	Septic Sore Throat
Diphtheria	Smallpox
Glanders	Typhoid Fever
Leprosy	Yellow Fever
Measles	

the person affected shall be absolutely isolated.

When the disease is—

Chancroid
Dysentery (amebic, bacillary)
Gonococcus infection
German Measles
Hookworm infection
Mumps
Rabies
Syphilis
Trachoma
Tuberculosis
Typhoid and paratyphoid fevers
Whooping Cough

the person affected shall be so restricted in movement that the disease will not spread from him to others.

When the disease is—

Dengue
Malaria
Yellow Fever

the person affected shall be kept in a screened room free from mosquitoes, provided that this form of isolation will be enforced only when practicable in the case of malaria.

No persons other than the physician or person in charge of or in attendance of the patient shall enter any premises, room, or apartment quarantined for a communicable disease in violation of the terms of the quar-

antine. No person shall willfully or negligently expose any other to a communicable disease.

Regulation 8. Placarding. When there is a case of anthrax, cerebro-spinal fever, cholera, diphtheria, glanders, leprosy, measles, plague, poliomyelitis, scarlet fever, septic sore throat, smallpox, typhoid or paratyphoid fever, typhus fever, whooping cough, or yellow fever, the health officer shall post a suitable placard or placards in a conspicuous place or places on the premises, apartment or room where the disease exists,¹² provided, if the case is under satisfactory hospital care, the placard may be omitted. No person shall remove such placard except the Health Officer or with his permission.

Note 12. There is no need to put a placard on the outside of a hotel or modern apartment house. In such case it should go only on the room or apartment occupied by the patient.

Regulations 9. Minimum Periods of Isolation. The minimum periods of isolation in various diseases shall be as follows:

Anthrax—until all lesions have healed.

Cerebro-spinal Fever—during clinical course and until two successive smears from the nose or naso-pharynx fail to show the presence of the specific organism.

Chickenpox—until primary scabs have disappeared from the skin and mucous membrane.

Diphtheria—until two successive cultures taken from the nose and two taken from the throat at least 24 hours apart, by the Health Officer or his representative, show the absence of the Klebs-Loeffler bacillus.

Cholera, dysentery (bacillary), typhoid and paratyphoid fever—during the clinical course and until the infective organism is shown to be absent from the excreta after not less than two examinations.

Glanders—human cases during clinical course; animals should be destroyed.

Gonococcus Infection—until the discharges show absence of the gonococci.

Measles—until seven days from the appearance of the rash and until all abnormal discharges from ear, nose or mouth have disappeared.

Leprosy—during course of the disease.

Plague—during clinical course.

Poliomyelitis—until three weeks from the day of the receipt of the report of the disease.

Scarlet Fever—at least three weeks after receipt of the report by the Health Officer and until all abnormal discharges from ears, nose, mouth or suppurating glands have ceased.

Septic Sore Throat—during clinical course.

Smallpox—until all scabs have disappeared and the lesions healed.

Syphilis—until open lesions of the skin and mucous membranes have healed.

Tuberculosis—as long as the bacillus is discharged.

Typhus Fever—during clinical course and in a vermin-free room.

Whooping Cough—until six weeks after onset.

Yellow Fever—during the first days of the fever.

Regulation 10. Rules for Food Handlers. No persons affected with diphtheria, dysentery (amebic or bacillary) gonococcus infection, scarlet fever, septic sore throat, syphilis in a communicable form, typhoid or paratyphoid fevers, or pulmonary tuberculosis, or who is likely to be carrier of these diseases, shall be employed or be present where milk or any other food is prepared, handled or sold. The Health Officer may examine or cause to be examined for the above named diseases any employee of any establishment where milk or food is prepared, handled or sold.

Regulation 11. Method of Control of Contracts. The Health Officer shall have the power to isolate or restrict the movement of any person who is known to have been exposed to any of the communicable diseases named below for a time equal to the maximum incubation period of the disease and in the manner prescribed in Regulation 7 of this chapter.

Incubation Periods: For the purpose of these regulations maximum incubation periods shall be considered to be as follows:

Anthrax—7 days.

Cerebro-spinal Fever—10 days, unless cultures from naso-pharynx fail to show meningococci.*

Chickenpox—3 weeks.

Cholera, Asiatic—5 days.

Diphtheria—7 days, unless a culture from nose and throat fail to show the presence of the Klebs-Loeffler bacillus.*

(*The carrier state may prolong the period in these diseases.)

Dysentery (bacillary)—7 days.
 German Measles—10 to 21 days.
 Gonococcus Infection—8 days.
 Influenza—5 days.
 Measles—16 days.
 Paratyphoid Fever—10 days.
 Plague—7 days.
 Poliomyelitis—10 days.
 Rocky Mountain Spotted Fever—10 days.
 Scarlet Fever—7 days.
 Septic Sore Throat—3 days.
 Smallpox—14 days.
 Syphilis—4 weeks.
 Typhoid Fever—21 days.
 Typhus Fever—20 days.
 Whooping Cough—21 days.

Regulation 12. Control of Carriers. The Health Officer or his representative may isolate or restrict the movement of carriers of the infectious agent of cerebro-spinal fever, cholera, diphtheria, dysentery, paratyphoid fever, typhoid fever, or any other communicable disease until their discharges are shown to be free from the specific organisms of the disease.

Regulation 13. Removal to Hospital of Certain Cases. When in the opinion of the Health Officer proper isolation or quarantine of a person affected with, or a contact, or carrier of any of the diseases mentioned in Regulation 2 of this chapter, is not or cannot be properly carried out on the premises occupied by such person, the Health Officer may cause such person to be removed to a hospital or other proper place designated by the Health Officer.

Regulation 14. Precautions by Attendants. The physician or any other person permitted to visit a person affected with communicable disease shall practice such measures of personal cleansing, disinfecting and all other precautions necessary, to prevent the spread of the disease to others.

Regulation 15. Disinfection. When any person is affected with a communicable disease, adequate disinfection shall begin at its onset and continue until its termination. It shall be the duty of the Health Officer to give specific instructions to the person attending a case or suspected case of communicable disease as to the methods of disinfecting the discharges and articles used by or on the patient, and it shall be the duty of the person in charge to carry out such instructions. No article shall be removed

from quarantined premises without a permit from the Health Officer.

When the case has terminated, the owner or occupant shall further disinfect, clean, or renovate the premises as the Health Officer shall require. Any articles which in the opinion of the Health Officer or his representative cannot be properly cleansed or disinfected shall be destroyed. The owner of any premises, apartment, or rooms, which have been occupied by a person affected with a communicable disease, shall not rent the same to others or permit occupation by others until the premises have been cleansed to the satisfaction of the Health Officer.

Regulation 16. Special Rules for Tuberculosis. Whenever there is a case of tuberculosis it shall be the duty of the Health Officer or his representative to take such proper precautions as he may deem necessary, and to give proper instructions to the patient and all other persons occupying the same premises to prevent the spread of the disease. Every person affected with tuberculosis shall dispose of his sputum, saliva, or other discharges in a manner not dangerous to public health. Whenever a person so affected is or is likely to be a menace to the health of others, the health department shall have the power to cause the removal of such person to an isolation hospital or other proper place until the danger has been removed.¹³ Upon recovery of a person having tuberculosis it shall be the duty of his physician to notify the Health Officer.

Note 13. The Committee believes that such procedure is desirable. Whether such a clause can be incorporated into an ordinance depends upon the powers conferred by the state law.

Regulation 17. Special Rules for Venereal Diseases. Reports of syphilis, gonococcus infection or chancroid made in accordance with Regulation 2 of this chapter, shall be considered confidential so far as consistent with public safety. The professional attendant of any case of venereal disease shall give the patient explicit instructions to prevent the spread of the disease to others. When such patient refuses or neglects to follow prescribed treatment, discontinues treatment, or is discharged as cured, the professional attendant shall immediately report these facts to the Health Officer. When any person affected or presumably affected with venereal disease does or is liable to

menace the health of others, the Health Officer or his representative shall have the power to cause the removal of such person to an isolation hospital or other proper place or to take any other measures authorized by law which are necessary in his opinion to prevent the spread of the disease.

Regulation 18. Vaccination. Any person who has not been successfully vaccinated against smallpox shall not be permitted to attend any public, private or parochial school.¹⁴ It shall be the duty of the Health Officer to furnish free to all persons vaccine virus for smallpox protection and also the serum or anti-toxin of any other disease.

Note 14. In a few states such a regulation is illegal. The state law and court rulings should be consulted.

Regulation 19. Rules for Funerals. When a person has died of cerebro-spinal fever, poliomyelitis, diphtheria, scarlet fever or smallpox, no person except the undertaker and his assistants, the clergyman and others permitted by the Health Officer, shall enter the house until after the funeral and until after the warning placard has been removed. If the funeral is held elsewhere than at the last residence of the deceased, the funeral may be public, provided only those members of the immediate family may attend who in the opinion of the health officer are free from infection and to whom he has given permission so to do.

Regulation 20. Diseases of Animals. Any veterinary or other person in charge of an animal affected or presumably affected with any disease communicable to human beings shall immediately notify the Health Officer. Whenever there is reason to believe that any animal has rabies such animal and all others bitten by it shall be securely confined by the owner or person in charge for such a time as is necessary to determine whether the disease exists. Every animal which has rabies shall be killed and the body disposed of to the satisfaction of the Health Officer. The Health Officer shall have the power to require muzzling of all dogs appearing on the public highways, and may call upon the police department to enforce this rule.¹⁵

Note 15. The control of animals is often a function given by law to a municipal department other than the health department. The local requirements should be ascertained. The Committee favors the above procedure.

Regulation 21. Special Powers for Emergencies. In an emergency, including the occurrence of any rare or unusual disease or when any disease becomes unusually prevalent, the Health Officer shall have the power to employ any measures necessary for the protection of the public health and make such expenditures as may be necessary for such purpose.

Regulation 23. Prohibition of Common Articles Dangerous to Health. The use of common drinking cups or other drinking or eating utensils or of common towels, or any other article for common use which might spread any communicable disease is forbidden in the (City of, Town of). The term "common" as used in this regulation shall mean for use of more than one person without proper cleansing and disinfection by methods approved by the Health Officer.

Regulation 23. Penalty. Any person who shall violate or fail to comply with any of the provisions of these regulations shall be punished by a fine of not less than \$25 nor more than \$100, or by imprisonment for not more than three months, or by both, fine and imprisonment.¹⁶

Note 16. While the terms of punishment depend upon local statutory provisions, or the discretion of the person drawing up an ordinance, the Committee recommends the minimum and maximum limits as here set forth.

Regulation 24. Repealing Clause. Any rules or regulations heretofore adopted and inconsistent with these regulations are hereby repealed.

APPENDIX

The following list refers to material of value for reference in drawing up municipal laws and ordinances:—

The State Laws (in most of the states, laws relating to all public health matters are collected and issued in one volume).

The Control of Communicable Diseases. Report of the American Public Health Association Committee on Standard Regulations Appointed in October, 1916. Reprint 436, U. S. Public Health Service, Washington, D. C.

A Guide for Formulating a Milk Ordinance, Bulletin 585, U. S. Department of Agriculture, Washington, D. C.

Report of the Committee on Milk Standards. February 16, 1917, Reprint 386, U. S. Public Health Service, Washington, D. C.

The Model State Law for Registration of Births and Deaths,

and
The Model State Law for Morbidity Reports, U. S. Public Health Service, Washington, D. C.

Report of the Committee on Vital and Penal Statistics, August, 1920,

and
Model Birth Registration Laws (4th Draft) both from National Conference of Commissioners on Uniform State Laws, Eugene A. Gilmore, University of Wisconsin, Madison, Wisconsin, chairman.

Model Housing Law, L. Veiller, Published by Russell Sage Foundation, 130 East 22nd Street, New York City, New York.

Venereal Disease Ordinances. Compilation of Suggested and Adjudicated Ordinances Which Have Proved Successful in Combating Venereal Diseases. V. D. Bulletin 39, U. S. Public Health Service, Washington, D. C.

Organization, Powers and Duties of Health Authorities. An analysis of the Laws and Regulations Relating Thereto in Force in the United States. (Public Health Bulletin No. 54) 1912. U. S. Public Health Service, Washington, D. C. (While this pamphlet is somewhat out of date, and there have been changes in state laws since it was published, it is nevertheless useful as a reference book.)

Vaccination. An analysis of the Laws and Regulations Relating Thereto in Force in the U. S. August, 1919. Public Health Bulletin 52, U. S. Public Health Service, Washington, D. C.

State Commissions for the Study and Revision of Child-Welfare Laws. Bureau Publication 71, U. S. Children's Bureau, Washington, D. C. (This pamphlet gives a good list of references.)

Report of the Committee on Health Provisions for State Laws Relating to Children of the National Child Health Council, Washington, D. C.

Developments in Social Hygiene Legislation from 1917 to September 1, 1920. American Social Hygiene Association, 105 West 40th Street, New York City.

Model Mosquito Ordinance, U. S. Public Health Reports, April 2, 1920.

Model Legislation for Saving Sight (an outline) National Committee for the Prevention of Blindness, 130 East 22nd Street, New York City, New York.

Synopsis of Child Hygiene Laws of the Several States, including School Medical Inspection Laws, November, 1920. Public Health Bulletin 110. U. S. Public Health Service, Washington, D. C.

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REPORT OF COMMITTEE ON PREPARATION, PACKING AND TRANSPORTATION OF FOOD

Presented to Food and Drugs Section, American Public Health Association, at San Francisco, Cal., September 16, 1920.

The past year has not added a great deal to our knowledge of preparation, packing and transportation of food. However, many events the world over have emphasized with greater force perhaps than ever before the importance of our subject to the general food problem.

We all know that the cry of "high cost of living" means to a great extent high cost of food. We can delay buying new clothes; we may forego the automobile and other luxuries; we may dispense with jewelry and other non-essentials, but we cannot be very long without food.

During the war we were urged to save food for the fighting armies and in order that the civil population might be able to produce the required war materials but now the clamor of the hour is cheaper food.

Eastern Europe is starving because the agricultural population is producing merely enough for its own use while the cities are starving, and what food is available for city-dwellers is out of reach of their purse.

This country is fortunate. We have been blessed so generously with the bounties of nature that we never need fear a serious food stringency. However, with the cost of raw materials, live stock, labor and transportation soaring without a corresponding increase in production, the price of pre-

pared food must necessarily rise in proportion.

While we, as sanitarians, are primarily interested in the hygienic side of preparation, packing and transportation of food, we cannot lose sight of the fact that when food becomes so high as to compel a very considerable curtailment of the dietary, either in quality or quantity, public health may become lowered. Similarly, if the methods employed in food preparation, packing and storage are faulty or inefficient and result in excessive spoilage, public health may suffer indirectly by the consequent reduction in the available supply and increase in prices.

A great deal has been said of late about the so-called deficiency diseases which have been ascribed to a lack of certain elements in the dietary. The deficiency here is largely qualitative; but is it not logical to assume that a quantitative deficiency brought about by decreased production and increased prices would, if long continued, result in a state of lowered public health, if not increased morbidity?

We are still very much in the dark about immunity and predisposition to disease. We do not know when and why one ends and the other begins. Is it not possible in the light of what we know about the deficiency or food-quality diseases that predisposition

to disease depends, at least in part, on food quantity?

In addition to the possible indirect influence that preparation of food may have on public health, there is, of course, the more important and immediate effect of eating food that has been prepared in an insanitary or ineffective manner permitting contamination with disease-producing organisms or subsequent development of toxic substances as a result of bacterial growth.

We had an unfortunate example of such an occurrence the past year in the outbreak of botulism in various parts of the country. Time and space will not permit a thorough discussion of all the phases of the lamentable incident nor is it necessary, because we are all familiar with the result of the investigations made by the various federal, state and municipal authorities, as well as by some leading universities.

When we consider the great quantities of canned foods prepared and consumed in this country annually and the rarity of botulism it becomes evident that the danger of botulinus intoxication is small indeed. Again, the fact that the cases of last year were few in number and that no repetition occurred shows that the cause of the outbreak was local and that the repressive measures taken were effective.

Two conclusions seem justified from the histories and investigations of last year's cases:

First: If the food had been more thoroughly sterilized and sealed the probabilities are the organisms would not have developed.

Second: If the general public had been familiar with the possible danger of eating canned food that seems abnormal in the slightest degree in odor, color or general appearance, or is taken from a swelled container, the food in question would in all likelihood not have been eaten. Several of the patients stated that there seemed to have been something wrong with it.

The wide publicity given these cases in the press unquestionably injured the market for canned food in general and probably resulted in financial loss to the producers and manufacturers, and also deprived the public of needed food. How much more prejudice is constantly developed in the public mind against canned and other pre-

pared food by an occasional spoiled package even without producing serious harm to the consumer can only be imagined.

An incident like the botulism of last year is usually followed by a train of legislative remedies not always based on well-established scientific facts which often result in more harm than good because they carry with them unnecessary and expensive restrictions.

Bill No. 14385 was introduced in the House of Representatives on June 3, 1920, and its purpose, as stated, is "To Prevent the Shipment in Interstate and Foreign Commerce of Certain Articles of Food Liable to Cause Botulism and for Other Purposes."

It provides that "No person shall ship or deliver for shipment in commerce any olives, string beans or asparagus, or other foods contained in tin or in glass, unless such olives, string beans or asparagus shall have been treated in such a manner as to destroy decomposition organisms by a method or methods prescribed by the Secretary of Agriculture in rules and regulations promulgated under this act."

The bill authorizes the Secretary of Agriculture to inspect the plants where these foods are prepared as well as the process of operations and the records of the firms, the cost of the inspection to be paid by the owners, monthly in advance. Legal action and punishment for violation of the act are also prescribed. The bill was referred to the Committee on Interstate and Foreign Commerce and ordered printed.

It seems that with the food market in the present uncertain condition and the cost of labor increasing, with the cases of botulism of last year fresh in our minds, and with legislation pending, this is an opportune time to take stock of what we know about food preparation. The time seems ripe to find out what we are doing and what we are not, and to try to improve our methods, if possible.

The prime object of such inquiry should be to make our prepared foods as perfect as modern knowledge can make them and conserve all food consistent with sanitary and scientific methods.

It has been asserted repeatedly in many quarters that huge quantities of food are wasted annually because of improperly cared for raw materials, inefficient process

of manufacture, insanitary handling of finished products, lack of understanding of the cause of spoilage and carelessness during transporting and storing.

A good deal of confusion exists in the application of food legislation. There is no universally accepted code, with the result that conflicting laws are created in different localities upon which decisions on sanitation, labeling, branding and adulteration are based.

A study of existing conditions may make it possible to formulate standards in the preparation, sanitation, care in keeping, etc., of each class of food that will serve as a guide to the producer, manufacturer, health officer, food official and others.

Of course, this is quite an ambitious undertaking but a great deal of valuable material has already been made available through the work of the Bureau of Animal Industry, the Bureau of Chemistry, the National Canners Association and other agencies, which can be utilized. Needless to say the authoritative approval by the Association of such methods as can be adopted as standard would be productive of a great deal of good.

Next in importance to production and preparation is transportation of food. If food could be produced with equal ease in every part of the country there would be no transportation problem; but because most of our foods, especially the perishable varieties, must be prepared in season at the place of surplus production and shipped great distances to the markets of greatest consumption, the question of transportation with reference to cost, sanitation and efficiency is of tremendous import.

If for some reason the transportation system breaks down, the result is not only a lack of supply which is followed by high prices of food in the large consumption centers but also a loss to the producer of the reward he expected to realize from his labors. His incentive to further production is thereby removed. It is self-evident that any interruption of the link between the producing and consuming centers must result in an increase in the prices of such foodstuffs as reach those centers.

We have heard a great deal of late about the deplorable condition of our transportation system and facilities. We know how difficult it has been since the war to move

anything, even mail. The press and the magazines of the country warn us constantly that the great grain and garden crops and fruits cannot be moved because of shortage of cars. We are even told that great quantities of perishable foods are spoiling because they cannot be shipped.

It seems certain that on account of the wearing out of the equipment during the war and failure to keep repairs up to the extent that had been the rule prior to the war there is a real shortage of equipment. The Interstate Commerce Commission recently estimated that the railroads need an additional 100,000 cars (20,000 of which should be refrigerator cars) and 2,000 engines. The unsettled state of railroad labor has also contributed in no small degree to the breakdown of transportation efficiency.

It has been estimated that in pre-war times the movement of refrigerator cars was about 80 miles per day. This average included all delays for loading and unloading, repairs, etc. For the first six months of 1920, the average was only 58 miles per day. This would have the same result as if under a movement of 80 miles per day about one-fourth of the cars had been destroyed.

There has also been a slowing up of box car movement in which such articles as grain and other food products not requiring refrigeration are transported. It is obvious that if a certain transportation service formerly required the use of a car for five days and the same service now requires ten days, the result is the same as if the car supply had been cut in two. On the other hand, if a service now requiring ten days could be reduced to five days the result would be the same as if the car supply had been doubled.

There are obviously only two possible remedies: First: An increase in transportation facilities. Second: A more efficient operation of the existing facilities. These remedies should go hand in hand and one should supplement the other.

In the Transportation Act under which the railroads were returned to private ownership, Congress created a fund out of which the Interstate Commerce Commission was authorized to loan money to carriers for a period of years to enable them to meet maturing obligations and to add to

their facilities to the extent required by the general public interest. The fund was not nearly large enough to supply the Commission's estimated minimum requirement of 100,000 cars and 2,000 engines. A sum of \$75,000,000 has, however, been set aside by the Commission to be loaned the railroads for the purchase of equipment. This is a step in the direction of the first remedy mentioned.

The other remedy, namely, more efficient utilization of present facilities can be brought about to some extent by an improvement in the morale and increase in the amount of work of the railroad employees which, it is hoped, will result from the recent wage adjustments.

It can also be aided somewhat by avoiding delays to cars through loading and unloading, and for that purpose heavy demurrage charges have been established by the railroads with the approval of the Commission.

And lastly, all the available shipping space, more particularly refrigerator cars, must be utilized to the fullest capacity.

In face of this, an attempt has recently been made to destroy at least in part the present facilities best suited for the preservation of certain of the perishable food products. The Interstate Commerce Commission has been asked that the owners of a certain system of refrigerator cars be not allowed to ship butter, eggs, cheese or dressed poultry in their meat cars. As these cars are the only refrigerator cars which provide regular service to thousands of small towns, it would mean if the request

is granted that these towns would either be deprived of the benefit of getting their foods from the markets of surplus production or it would have to be shipped to them in box cars and arrive, in many instances, in damaged or spoiled condition.

All the efforts of the Federal Department of Agriculture in recent years have been toward having the perishable products concentrated in one form or another as near the point of production as possible and then carried under refrigeration to distant markets. For example, it has urged for years that eggs and dressed poultry be concentrated in the territory of surplus production. The Department has gone so far as to assert that to carry dressed poultry in ice-packed packages where the poultry came in direct contact with the ice constituted a fraud upon the consumer because of the immense amount of water the fowls would contain after a journey in direct contact with melting ice.

It seems clear that from the standpoint of public health and well-being every effort should be made not only to continue the facilities we have, but to improve, perfect and enlarge the facilities necessary for the transportation of perishable food products over long distances and that any step which tends to destroy the availability of any of those facilities is an action directed against the public welfare.

W. H. Lipman, M. D., Chairman.
Anna Augusta Chapin.
A. W. Lombard.
Henry W. Lehmkuhl.
J. D. Nichols.



EMPLOYMENT BUREAU

HELP WANTED

Help wanted announcements will be carried free in this column until further notice. Copy goes to the printer on the 10th of each month for publication on the 20th. Mail to Boston office as early as possible.

In answering keyed advertisements, please mail replies separately to editorial office in Boston, Mass. In replying give age, professional training, salary requirements, previous positions held and three or more references.

Wanted: Assistant Bacteriologist for Public Health work in State Laboratory. Salary \$1200 to begin. Apply State Medical Advisor, Boise, Idaho, giving references, qualifications and when available.

\$2500 a year for recent M.D. who can teach Hygiene and carry on private research in bacteriology or serology. Address 432, G.M.D., care of this Journal, Boston address.

Wanted: Chemist with some training in bacteriology, including milk and water analysis, to fill position as health officer in New England industrial city of 16,000. Apply Board of Health, Berlin, N. H.

Wanted: Sanitary Engineer who has had some experience in malaria control work, preferably someone who has lived in the South, and is familiar with conditions. Salary \$200 a month. Address 431, F.M.L., care of this Journal, Boston address.

Wanted: Competent man for Superintendent of Tuberculosis Sanatorium in

Northern Minnesota 18 miles from Bemidji. Competent business man as well as a competent physician. State experience, salary required and give references. Address P. A. Walling, Commissioner, Park Rapids, Minnesota.

Health Department, City of 50,000, will need April 1st a Supervising Nurse for twelve nurses. Must be well educated, have executive ability and experience. Salary \$2,000, an automobile and its upkeep. Address Health Officer, Charlotte, N. C.

POSITIONS WANTED

Position wanted announcements will henceforth be carried in this column. The charge is \$2 per insertion. Copy should be received at this office by the 10th of the month.

Wanted: Position as a laboratory worker or teacher of Bacteriology and Laboratory Methods in Medical School or School of Public Health by woman, B.S., Ph.D., from Standard University. Nine years' college teaching experience. Board of Health and Army laboratory experience. Address 142, H. E. R., care of this JOURNAL, Boston address.

Wanted: Position in any line of Public Health work, by a man of six years' experience in Federal, State and Municipal health work. Public Health degree and possessed of considerable executive ability. Address David E. Rouse, State Board of Health, Montgomery, Alabama.

Policy of the United States Steel Corporation with Respect to Treatment of Labor:—Coming to this question of welfare work, I think one of the most important questions to consider is the question of the proper treatment of employees. It is not important to consider what the treatment of the employer by the employee is or may be. The man who has the intelligence and the success and the capital to employ labor has placed upon himself voluntarily a responsibility with reference to his men which he cannot escape and ought not to endeavor to escape. And I want to say to you gentlemen, in my opinion one of the greatest questions for consideration by the

capitalists of America today is the question of the treatment of their employees—of the laboring men, so as to make it certain there will never in this country be any excuse for the advancement of the ideas of the anarchist or the socialist. If those who represent capital, those who represent power, those who have the opportunity to make better or worse the condition of the laboring men, will make it absolutely certain that the right thing is done under all circumstances, and that no excuse is offered for attack on the part of those who are employed, they will be doing something for their country that is worth while.—Elbert H. Gary, *Bull. No. 8, U. S. Steel Corp.*, Bur. of Safety, Sanitation & Welfare, Dec., 1920, p. 3.

CONVENTIONS, CONFERENCES, MEETINGS

- March, first week, Concord, N. H., New Hampshire Health Officers' School of Instruction and Health Conference.
- March 7-10, Chicago, Ill., Midwinter Conference of the American Medical Association.
- March 7-9, Chicago, Ill., Association of American Medical Colleges.
- March 7-9, Chicago, Ill., Annual Congress on Medical Education and Licensure.
- March 7-9, Chicago, Ill., Federation of State Medical Boards of the United States.
- March 7-9, Chicago, Ill., American Conference on Hospital Service.
- March 10, 1921, Halifax, N. S., Social Service Council of Nova Scotia.
- April 5, Hackensack, N. J., New Jersey State Nurses' Association.
- April 5, Nashville, Tenn., State Medical Association of Tennessee.
- April 12, Clarksburg, W. Va., West Virginia Health Officers' Conference.
- April 18-23, Cincinnati, Ohio, Public Health Federation.
- April 19-20, Columbia, S. C., South Carolina Medical Association.
- April 19-21, Montgomery, Ala., Medical Association of the State of Alabama.
- April 19-21, New Orleans, La., Louisiana State Medical Association.
- April 25, Pinehurst, N. C., North Carolina Health Officers' Association.
- April 28, Boston, Mass., Massachusetts Association of Boards of Health.
- April 28-29, Detroit, Mich., Michigan College of Surgeons.
- May 2-5, Brooklyn, N. Y., New York State Medical Society (with Exhibition).
- May 3-5, Columbus, O., Ohio State Medical Association.
- May 4, Rome, Ga., Georgia Medical Association.
- May 4, Brooklyn, N. Y., New York State Association of Public Health Laboratories.
- May 4-6, Wichita, Kans., Kansas Medical Society.
- May 5, Macon, Ga., Georgia Hospital Association.
- May 9-10, Indianapolis, Ind., Indiana State Health Association.
- May 9-11, Buffalo, N. Y., American Association of Engineers.
- May 10-12, San Diego, Cal., California State Medical Society.
- May 9-12, Lincoln, Neb., Nebraska State Medical Association.
- May 10-11, Atlantic City, N. J., American Association of Physicians.
- May 10-11, Laurel, Miss., Mississippi State Medical Association.
- May 11-13, Des Moines, Iowa Medical Association.
- May 13-14, Boston Public Library, Boston, Mass., Massachusetts Tuberculosis League.
- May 16-17, Toronto, Ont., Can., Ontario Health Officers' Association.
- May 16-20, Winton Hotel, Cleveland, Ohio, Ohio Hospital Association.
- May 17-19, Springfield, Ill., Illinois Medical Society.
- May 17-19, St. Joseph, Mo., Missouri State Medical Association.
- May 17-19, McAlester, Okla., Oklahoma State Medical Association.
- May 18-19, Hartford, Conn., Connecticut State Medical Society.
- May 19-21, Hot Springs, Ark., Arkansas Medical Society.
- May 23-26, Congress Hotel, Chicago, Ill., American Society Mechanical Engineers.
- May 24-26, Aberdeen, S. D., South Dakota State Medical Association.
- May 25-26, Concord, N. H., New Hampshire Medical Society.
- May 26-27, Hotel Waldorf, Fargo, N. D., North Dakota State Medical Association.
- May, 1921, Copenhagen, Denmark, Second Regional Conference.
- May 31-June 1, Boston, Mass., Massachusetts Medical Society.
- May, fourth week, Pence Springs, W. Va., West Virginia State Medical Society.
- June 3-5, Boston, Mass., Conference of State and Provincial Health Authorities of North America.
- June 6-10, Boston, Mass., American Medical Association.

November 14-18, New York City, American Public Health Association

PUBLIC HEALTH NOTES

Abstracts by D. GREENBERG, M. P. HORWOOD, JAMES A. TOBEY and HOMER N. CALVER.

Complement Fixation for Tuberculosis in Children.—In a large series of children (1556) studied, several features of interest regarding the complement fixation test have been observed. In manifest tuberculosis there has been a striking relation between the age of the child and a positive reaction. More than 80% of those over 6 years of age gave a positive reaction, a ratio similar to that found in adults, while none in the first year reacted positively to the test. From the second to the sixth year gradually increasing numbers of children develop fixing antibodies. The absence of fixing bodies in tuberculosis of infants and in a considerable ratio of younger children may have some relation to the very rapid spread of the disease at this time of life which is commonly observed, since the inability to form fixing antibodies may be associated with a lack of power to form other protective antibodies.

The absence of complement fixing antibodies in young children, however, has little importance in the question of diagnosis since it is at this age that the tuberculin skin tests are of greatest value in calling attention to an active infection. In older children, on the other hand, the skin tests do not always indicate the presence of an active tuberculous process, and it is here that the complement fixation test is of particular value, because of the high ratio of tuberculous children who give a positive reaction.

The complement fixation test has proved of considerable value not only in calling attention to cases of tuberculosis without well defined clinical signs, but in making a decision regarding the presence of active tuberculous foci in children exposed to the disease and also in following the course of a healing lesion. This test must not be considered a relatively easy and infallible method of diagnosing an active tuberculous process. It is of most value when used as an aid to a careful and complete physical examination. The results show that a positive fixation reaction is associated in a large majority of cases with a tuberculous lesion that is pathologically if not clinically active, and consequently any patient giving

a positive reaction should not be considered free from active tuberculosis without a thorough study.—J. V. Cooke, *Amer. Jour. Dis. of Children*, January, 1921, 78, (D. G.)

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Tuberculosis Menace Found in Condemned Cattle Meat.—Following the tuberculin testing of 37 cattle on an Indiana farm, 14 animals which reacted to the test, when slaughtered in an establishment under Federal supervision, showed lesions of the disease not only on the organs, but even in some of the meat. In reporting the incident to the United States Department of Agriculture, Inspector R. R. Newman explained that the demonstration was of unusual interest because all the cattle were pure bred. One of the cows, which had supplied milk for local use, showed extensive lesions of tuberculosis in the mammary glands, a condition associated with probable infection of the milk. Several stock raisers who saw the tuberculosis carcass, have signified their desire to have their herds qualify for a place on the accredited-herd list. Herds on this list are officially recognized as free from tuberculosis.—(J. A. T.)

✦

Tuberculosis in Infants and Young Children.—A study of the records of the Babies' Hospital, New York City, shows tuberculosis to be an important and frequent cause of death among infants and young children. It is encouraging to note the decline in the number of deaths from this cause as compared with the previous decade. This study also shows a greater incidence of tuberculosis acquired by inspiring tubercle bacilli compared with that acquired by swallowing the bacilli with milk or food. Tuberculosis in young subjects becomes rapidly generalized, the rapidity and degree of generalization, being as a rule in inverse ratio to the age. Of 184 necropsies made not a single instance of healed tuberculosis was found. Of the forms of tuberculosis, the meningitic form was present in 53% of the children, diagnosed as tuberculous.—M. Wollstein and R. C. Spence, *Amer. Jour. of Dis. Children*, January, 1921, (D. G.)

Environmental Factors in Tuberculosis.

—If we would know the true environmental factors which operate in the breakdown of tuberculosis we must not accept as our definition of environment "those physical objects that externally encompass human beings." There are many other factors which are of very great importance. There may be an environment of disease, of measles, of septic infections, of the common cold, of influenza, etc. Again there is an environment which comprises numberless opportunities for physical injury to the person, an environment of perfectly accidental happenings, which neither foresight nor law nor instruction can ever wholly do away with. Then there is the environment of personal association, of antagonistic personal association in particular. The older philosophers and brooders over the well being of man were enormously impressed by this factor in human nosology. There is a social and familial environment of amiability and good fellowship and contentment and happiness; it may exist in surroundings which physically may be far from our accepted hygienic ideal, and its effect on the general well being of those happily situated in it is all good. The long and short of it is that environment comprises all and everything that enters into the experience of a human being; and that, as regards tuberculosis, any experience that may modify in any way the origin and development of infection is an environmental influence.—A. K. Krause, *Amer. Rev. Tuberculosis*, Nov., 1920, 713. (D. G.)



Contact Infection in Tuberculosis.—The author confirms the work of previous investigators concerning the relation of contact with the tubercle bacillus. Experiments were carried out to determine the infectiousness of droplets from coughing patients, of gauze used by coughing patients to cover the mouth, pillow cases, door knobs, eating utensils and of frequently-handled magazine covers. The results indicate that of the guinea pigs that were exposed to the washings from these objects a fair number presented evidences of tuberculous infection. In concluding the author says that aside from the mere presence of the organism in the body other factors are necessary for the development

of clinical tuberculosis. What the factors are has not as yet been clearly shown. In all probability there must be a lowering of the individual resistive power; whether this is congenital or acquired, whether purely local or constitutional resulting from pathological states or physical abnormalities is still a question.—J. B. Rogers, *Jour. A. M. A.*, Dec. 18, 1920, 1690. (D. G.)



Red Cross Aid for Salem, Ohio.—The American Red Cross appropriated \$70,000 to assist in coping with the serious epidemic of typhoid fever in Salem, Ohio, recently. This organization established four emergency hospitals in which about 200 persons were cared for. Fifty-eight nurses were assigned to Salem during the epidemic. The citizens of Salem also raised \$52,000 in spite of disrupted and industrial conditions.—(J. A. T.)



Hospitals for ex-Service Men.—The U. S. Public Health Service advocates that an adequate hospital construction program should be undertaken by the national government to care for ex-service men and women. Tuberculosis and mental disorders create the most urgent demands and the ones which will require hospital treatment over long periods.

Army patients suffering from tuberculosis are warned against migration to the semi-arid west, all service and contract hospitals in that section being now completely filled.



Milk-Borne Diphtheria.—A small epidemic of diphtheria is described, which, when traced to its source showed the vehicle of infection to be unpasteurized milk. Cultures were taken from the family of the dairyman and from the other milk handlers. A daughter of the owner had a sore index finger, which on examination showed the nail to be gone and the sore to be covered with a soft brownish scab, removal of which revealed a soft white exudate. Cultures from this sore showed *B. diphtheriae*. It was later learned that this girl had milked except when her finger was too sore to do so and that she had been at work at this dairy either milking, delivering milk or helping in other ways.—J. E. Henry, *Jour. A. M. A.*, Dec. 18, 1920, 1714. (D. G.)

Nutrition Class Proves Value.—Interesting results have been obtained in a nutrition class conducted by the American Red Cross Chapter in Elden, Mo. Of the 502 children weighed and measured, 198, or 39% were found to be under weight. The second weighing, which took place two weeks later, showed that all but five had gained in weight. Milk is being furnished by the chapter to undernourished children in the schools and arrangements are being made with lunch room owners to provide at least one hot dish daily for children who cannot have their noonday meal at home.—(J. A. T.)



Sheepskin Coats for T. B. Patients.—The Public Health Service has purchased 2,500 sheepskin lined coats for use in its tuberculosis hospitals. Clothed in these wind-proof coats, which extend to the ankles, ex-service men are expected to enjoy the sunshiny winter days while taking the cure in their reclining chairs during the rest hours at Uncle Sam's various sanatoriums. A sufficient number of these coats has been sent to all the sanatoriums, both those in the arid southwest and those in the Asheville sector, as well as others throughout the country. Even those in southern California have not been neglected, as the days are sometimes chilly even in that favored clime.



Immigration and Disease.—In the Annual Report of the U. S. P. Health Service, Surgeon General Cumming outlines the situation with reference to the importation of disease from foreign countries.

"With the cessation of hostilities in Europe and the resumption of maritime commerce the danger of the introduction of epidemic diseases into the United States increased. During the war sanitation and public hygiene were more or less neglected. In the countries of central Europe conditions became very favorable for the outbreak of epidemic diseases and in many areas infection of typhus, plague and cholera smouldered along ready to burst forth under conditions that subsequently were sure to arise. The saving feature of the whole situation was the restriction of travel from one country to another. On the resumption of commercial intercourse the

expected happened. Even before the armistice this condition of affairs was foreseen and medical officers of the Public Health Service were sent to Europe for the purpose of investigation and to make preparation for the application of preventive measures at European ports of departure whenever there should be resumed trans-Atlantic travel. At present officers of the Public Health Service are stationed at practically all of the important ports of continental Europe for the purpose of inspecting vessels and personnel prior to their departure for ports of the United States. All verminous persons coming from typhus-infected areas are required to undergo appropriate treatment and detention when necessary, before embarkation. Notwithstanding this precaution, however, typhus has broken out on several of the vessels bound for ports of the United States, but with the detection of the disease on the arrival of the vessel and the appropriate treatment of personnel at quarantine stations the efforts to prevent the introduction of typhus from Europe has proven entirely successful. Measures in force along the Texas-Mexican border to prevent the introduction of typhus from Mexico into the United States have been equally effective. While typhus would probably never cause such a serious epidemic in the United States as in other countries, it is by no means improbable that the conditions in the tenement sections of the larger cities would not be productive of a serious epidemic of typhus if the infection were introduced into such localities."



More Girls Than Boys Are Under Weight.—Records of weight of school children in relation to age and height have been made in six high schools and eighteen elementary schools of Baltimore county, Maryland.

Of 851 girls in the high schools, 171, or about 20% were under weight, and of 1,161 high school boys, 197, or about 16%, were under weight. Almost the same condition was found in the elementary schools. Of 1,086 girls, 218, or about 20%, were under weight, and of 1,274 boys, 182, or about 14%, were under weight. In all, 1,937 girls and 2,435 boys were examined.—*School Life*, U. S. Bureau of Education, Dec. 1, 1920. (J. A. T.)

Health Conditions in Poland.—According to government reports the number of children infected with tuberculosis in Poland is estimated at 40%, typhus is spreading at an alarming rate among the undernourished population, and there is an estimated food supply sufficient to last only four months. After six consecutive years of privation and suffering without adequate food or clothing children of the new central European republic fall easy prey to plagues. Tuberculosis among the milch cows of the nation is a strong contributing factor to the alarming spread of the disease and medical officers of the American Red Cross who have made investigations among the rural districts report that bovine tuberculosis is general. An unusually high rate of child mortality is the result.

The coming of winter has brought a recurrence of typhus, the disease that caused hundreds of thousands of deaths in central Europe last winter. In its effort to better sanitary conditions the American Red Cross has turned over to the danger zones east and south of Warsaw tons of soap, which will be used in hospitals, public baths and for distribution among the villages. Before the war Poland made a large amount of soap, but the industry has been crippled by lack of materials and labor.

It is estimated that more than 600,000 refugees came into Poland during the months of July and August. The overcrowded conditions, dirt, vermin and infectious diseases apparent among these thousands point toward a recurrence of epidemic diseases of greater magnitude than ever before, says an official report. An acute shortage of drugs also hinders the fight against the disease.

"There is no strychnine, no digitalis or strophanthus," said Dr. Habicht, former surgeon in the Austrian navy, now serving with the Polish general staff as plenipotentiary to the American Red Cross. "Oil of camphor is the only cardiac stimulant that is available in Poland in any quantity sufficient to meet the demands of the health situation. This shortage of pharmaceutical drugs, coupled with the almost total absence of disinfectants, makes Poland's fight against the typhus plague an unequal one and will undoubtedly mean the death of thousands."

Such alarming health conditions have led the European Relief Council, of which the American Red Cross is a member, which is raising \$33,000,000 for relief among the children of Europe, to appropriate \$10,000,000 toward a medical program.—(*J. A. T.*)



Feeding Garbage to Hogs.—Under this title the U. S. Department of Agriculture has issued an attractively gotten up pamphlet (*Farmers' Bulletin 1,133*). A number of acts are brought out in this pamphlet, among them that the waste food products of more than 8,000,000 people are being fed to swine and fully 40,000,000 pounds of garbage fed pork are sold annually. It is stated that a ton of municipal garbage produces 40 pounds of marketable live weight of hog on the average. Information to the public of the feeding in order to keep the garbage free from cans, glass, etc., is urged and the municipality should make the collections and dispose to contractors on long time contracts unless the city operates its own hog-feeding farm. Raw garbage is better than cooked garbage, though that which is frozen should be thawed. Immunization against cholera should be given to hogs to be fed garbage. Hogs fed on garbage show no greater susceptibility to tuberculosis, pneumonia or kindred diseases than grain fed animals.—(*J. A. T.*)



Influence of Antityphoid Inoculation on Typhoid Rates.—The experience of the industrial department of the Metropolitan Life Insurance company shows that the typhoid fever death rate in 1919 for white men between 20 and 35 years was 64% below that of the annual average for the same group in the six years 1911-1916, while the rate for white women showed a decline of only 47%. The death rate for white men in this age group for the six-year period 1911-1916 was 22.3 and for white women 14.9 per 100,000. The rate in 1919 for white men was 8.0 and for women 7.9. Since a large proportion of the men had the benefit of army and navy antityphoid inoculations and the women did not the greater decline in the typhoid rate among these men must be ascribed to the army and navy antityphoid inoculations.—(*Jour. A. M. A.*, Nov. 27, 1920, 1504. (*D. G.*))

Effects of Syphilis on Families of Syphilitics.—The authors report their findings in the examination of the families of 555 late syphilitics made at the Psychopathic Hospital, Boston. They find that the family of the late syphilitic abounds with evidence of syphilitic damage. (1) At least one-fifth of the families of the syphilitic have one or more syphilitic members in addition to the patient. (2) Between one-third and one-fourth of the families of the syphilitics have never given birth to a living child. This is much larger than the percentage obtained from the study of a large group of New England families taken at random which shows that only one-tenth were childless. (3) More than one-third of the families of syphilitics have accidents to pregnancies; namely, abortions, miscarriages or stillbirths. (4) The birth-rate in syphilitic families is 2.05 per family; whereas the birth-rate in New England families mentioned above is 3.8 per family or almost twice as great. (6) Two-thirds of the families show defects as to children (sterility accidents to pregnancies, and syphilitic children). Between one-third and one-fourth of the spouses examined show syphilitic involvement. (7) Between one in twelve and one in six of the children examined show syphilitic involvement. (8) One-fifth of the children born alive in the syphilitic families were dead at the time the families were examined. This does not differ materially from the general average in the community. (9) One-fifth of the pregnancies are abortions, miscarriages or stillbirths, compared with less than one-tenth of the pregnancies in non-syphilitic families. (10) The average pregnancies per family is 2.58, compared with 3.88, 4.43, and 5.51 in non-syphilitic families. The family of every syphilitic patient should be examined irrespective of the stage of the disease or the symptomatology presented by the patient when first seen. If this is done, cases of conjugal and congenital syphilis will be discovered which would otherwise be neglected. They will often be found at a period when symptoms are not active, and thus treatment may be instituted before irreparable destructive lesions have occurred.—H. C. and M. H. Solomon, *Social Hygiene*, October, 1920, 469. (D. G.)

NOTES FROM FOREIGN LANDS

Fighting Disease in Montenegro.—As a first step in a determined campaign against venereal diseases in Montenegro, a Wassermann laboratory and public dispensary has been organized at Podgoritzza by the government of Montenegro, to be affiliated with the American Red Cross hospital which has been taken over by the local authorities. An appropriation of 150,000 dinars has been made for the new work by the Jugo-Slav Government, as the result of earnest appeals from local physicians.—(J. A. T.)

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Official Aid for Volunteer Societies.—The British Ministry of Health in a circular addressed to local authorities urges them to render such financial assistance to the voluntary agencies engaged in maternity and child welfare work in their district as circumstances render desirable. It appears that many authorities are already doing this, contributing either a certain percentage of the expenditure of the voluntary agency or a fixed sum. Assistance has become necessary because of the diminution of voluntary subscription and the general rise in prices. The Ministry of Health feels that if the work these societies are carrying on were allowed to lapse it would become entirely an official burden. By giving financial assistance to these societies local authorities will help to preserve for the service of mothers and children not only the voluntary subscriptions which these societies can command, but also the valuable services of their unpaid workers.—*Lancet* (London), Dec. 4, 1920. (H. N. C.)

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Netherlands Child Welfare Council.—A Central Council of 10 to 20 members, with offices at The Hague, was appointed by royal decree in March, 1920. Its duties are to advise and assist the Government in matters relating to educational activities outside of school, affecting children between the ages of 13 and 18. The Council is to inform the Government on matters connected with the subsidizing of the various agencies and the promotion of coöperation between them. It is also required to make an annual report to the Minister of Public Instruction.—*Weekly Summary, Children's Bureau*, Washington, D. C. (H. N. C.)

Medical Relief for the Children of Europe.

—Nearly 20 child relief units of the American Red Cross have already been established in Europe, most of which are in Poland, where the greatest distress exists among the child population. Within a few months it is expected that 50 such units will be in full operation and that ultimately there will be at least 100. Plans for the work embrace the Baltic States and to a certain extent Austria and Hungary, as well as Poland and adjacent countries and Jugoslavia. The general plan of organizing these units provides for a doctor, several nurses and a trained social worker for each unit. Wherever possible local personnel will be utilized. In all cases the Red Cross effort is directed toward building up in the community in collaboration with the public authorities and local organizations, permanent, constructive measures for saving child life which will remain effective when the Red Cross finally withdraws.

An appropriation of \$5,000,000 has been voted to carry on child welfare work in Europe. This work is supplementary to clothing and feeding plans of the European Relief Council and is concerned entirely with medical care.—(*J. A. T.*)



Classes for Myopic Children.—After four years' experience and observation in the Govan Parish School, Scotland, much valuable information has been acquired regarding the teaching of children suffering from high myopia and partial blindness. In this school special attention has been given to the development of proper desk and seat for the children and the arrangement of blackboards and windows. The desks consist of a flat surface 30x22 inches fixed on a semi-circular guide of metal so that it can be set at any desired angle or distance from the seat. The edges of the desk are fitted with grooved straps so that there may be inserted paper for use in printing large letters with rubber type, or blackboards so that the child may write large letters at arm's length. The blackboard space on the wall has been made extraordinarily large by means of an arrangement of double boards which may be easily moved with ropes and pulleys. An excellent summary of the scholastic treatment of myopia is given.—*G. A. Brown, Med. Officer, Jan. 1, 1921. (H. N. C.)*

Report of the Scottish Consultative Council.—The Scottish Board of Health, like the British Ministry of Health, has a Consultative Council on Medical and Allied Subjects. Its interim report on a Scheme of Medical Service for Scotland compares favorably with similar reports used in England and Wales. There is, however, no mention made in this report of primary and secondary health centers which were a central feature of the English report. Prominent features of the report are provisions for an increased number of convalescent homes, for "hospices" and for laboratory services. The proposal for "hospices" is a novel one. These are recommended to meet the urgent need for the better accommodation for care of ordinary illness than can be found in many of the homes of the industrial workers. They consist of few beds in an ordinary house within easy reach. The report points out that the whole scheme of medical service recommended by them would not only be economical in practice but would be directly profitable to the state.—*Medical Officer, Jan. 1, 1921. (H. N. C.)*



Infant Mortality and Tuberculosis in Vienna.—An increase of 40% in the deaths of children under one year of age has been found by American Red Cross officers making a statistical study of child health conditions in the Austrian capital. Between January 1 and June 30, 1920, there were 15,681 births and 20,129 deaths, an excess of 6,448 deaths. This disparity is further increased by the death of 2,474 children in their first year, making the actual decrease in population nearly 9,000 for the first six months. Nearly 25% of the deaths among the people of Vienna are attributed to tuberculosis. There are today 115,000 tuberculous children in Vienna, 16,000 of whom are in urgent need of surgical treatment. Of 54,000 children recently examined at the state clinic, but one in 12 was in normal health. Symptoms of rickets have been found in 90% of the school children under 12 years of age, and there are 30,000 well-developed cases of this disease now known to the authorities.—(*J. A. T.*)

STATE HEALTH NOTES— LEGISLATION

National. Congressional Procedure. —

Since the last issue of the JOURNAL, the Sheppard-Towner Bill (S 3259) for 'the public protection of maternity and infancy was reported favorably in the House by the Committee on Interstate and Foreign Commerce on January 28. It is now (Feb. 4) on the calendar, but it is a question whether action will be taken on it or not. Congress is much crowded and there are many appropriation bills under consideration. The Smith-Towner Bill to establish a Department of Education, which was favorably reported on January 17, is in the same predicament. There is only a month left in which the 66th Congress functions. The bill (H R 15894) authorizing an additional appropriation for medical, surgical and hospital services for persons who served in the World War seems likely to pass.

The Sundry Civil Appropriation Bill for 1922, which was adopted in the House on January 7, contained an item of \$200,000 for the Division of Venereal Diseases of the U. S. Public Health Service; \$336,715 was asked for. The appropriation of \$2,246,924 requested for the Interdepartmental Social Hygiene Board was entirely eliminated. Unless the Senate comes to the rescue, this board will cease to function. The House refused to give the Public Health Service \$200,000 for the control of influenza and other epidemic diseases and also refused an item of \$50,000 for health education.

Many people think the *Congressional Record* is dry reading. The following is taken verbatim from the *Record* of January 3 and may prove rather interesting to public health workers. It shows to an extent the way in which health topics are discussed in Congress.

The Clerk read as follows:

Prevention of epidemics: To enable the President in case only of threatened or actual epidemic of cholera, typhus fever, yellow fever, smallpox, bubonic plague, Chinese plague or black death, trachoma, influenza, or infantile paralysis, to aid state and local boards, or otherwise, in his discretion, in preventing and suppressing the spread of the same, and in such emergency in the execution of any quar-

antine laws which may be then in force, \$500,000.

MR. MANN of Illinois. Mr. Chairman, I move to strike out the last word. I notice that it is proposed to increase the epidemic appropriation from \$355,000 which was the present law, to \$500,000 for the next year. There is one reason which I can readily understand: There may be an epidemic following the recent election. (Laughter.) But what is this money for, may I ask, and how much is being used now for imaginary or real epidemics?

MR. GOOD. The expenditure this year has largely been in Southern ports. The bubonic plague has broken out in New Orleans and two or three other Gulf or Southern cities and it was necessary to commerce to carry on a very extensive work there to exterminate rats. That has cost a great deal of money, and my recollection is that they have expended for this year the most of their appropriation and will come in for a deficiency because of that fact.

MR. MANN of Illinois. Well, it may be if there has been an epidemic or threatened epidemic in these ports, I was not familiar with that fact, but I can see that is a very good work, but while they are spending so much money in killing off rats the number of rats seems to be increasing everywhere.

A year or so ago, maybe longer, we included influenza in this item. Of course, influenza is always present. Any bureau of the Government can always find ways of spending money for influenza. Is there any necessity for carrying that provision in this item so as to encourage them to spend money?

MR. GOOD. I will say to the gentlemen that they had a separate item for influenza, and we struck that out and put the word in here, so that if the influenza epidemic should break out again it could not be said that Congress had not made some provision for the investigation.

MR. MANN of Illinois. Of course, it is inevitable, I suppose, where we ever make an appropriation for a possibility, so as to guard against what might happen in the future, they immediately seize that money to establish a current work and continue it forever.

MR. GOOD. That is true.

MR. MANN of Illinois. And if the emergency arises they never have that money for the emergency. I get tired of this abuse of power on the part of many of the Government officials, but which I think is perfectly natural. They are pressed to spend the money. I am not criticizing them.

MR. GOOD. They asked for \$200,000 as a separate appropriation for influenza. We struck out and put in the word here so as to give them authority.

MR. MANN of Illinois. The word was in here before.

MR. GOOD. Yes; in the law but not in the estimate. They asked to have it stricken out of this paragraph, but to insert a new paragraph with an appropriation of \$200,000 for influenza alone. We refused that.

The Chairman. The time of the gentlemen has expired. The Clerk will read as follows:

Rural Sanitation. For special studies of and demonstration work in rural sanitation, including personal services and including not to exceed \$5,000 for the purchase, maintenance, repair and operation of motor propelled passenger-carrying vehicles, \$50,000; Provided, That no part of this appropriation shall be available for demonstration work in rural sanitation in any community unless the State, county or municipality in which the community is located agrees to pay one-half the expense of such demonstration work.

MR. MANN of Illinois. Mr. Chairman, I move to strike out the last word, I shall not propose an amendment to increase the amount of appropriation for rural sanitation, and I suppose under existing conditions I probably would not vote for one. And yet it almost made me heartsick at times to think of the enormous sums of money absolutely expended, as it seems to me with an Army too big and a Navy too great, and then refusing to spend a little money where it would make people healthier, happier and wiser. The Government appropriates millions of dollars to bring men into the Army, millions of dollars for any kind of a naval craft, and then much more to support the personnel of that craft than it would cost to spread light throughout many sections of the country about sanitation and health. I do not think it is the duty of the general Government to regulate the affairs of all the individuals in the country, but when I know the good that has been done not merely by the Government but by organizations outside and the good that might be done in a direction like this, it makes me wonder if we will ever wake up and have sense enough to save money where it is not needed to be expended and expended where it will do real good.

MR. HUMPHREYS. Mr. Chairman, I move to strike out the last word. I agree with what the gentlemen from Illinois (Mr. Mann) has said. I just wanted to call the attention of the chairman to this proviso, "that no part of the appropriation shall be available for demonstration work," and so forth, except upon a 50-50 basis.

MR. GOOD. That is current law.

MR. HUMPHREYS. Yes; that is current law and I very seriously doubt the wisdom of it. The Federal Public Health Service, in my opinion, is thoroughly justifiable. It is a Federal activity that has done

great good. It is economy to do the things that are done by the Public Health Service. It is very much more sensible to have a bureau here make investigations and secure information for all the states than it would be to undertake to have 48 separate ones doing the work in the states. I believe they ought to get information on the various subjects relating to the public health, for the treatment of pellagra, typhus and for rural sanitation, and so forth. Having gotten that information, I think the Public Health Service ought to make it available to the state boards of health so that they may use it, telling them "here is our experience, here is the result of our investigations carried on everywhere. We give the information, and the state board can use it if it wants to do so." We put it on the 50-50 basis. What is the result? We have the example before us a little further on in this bill. We appropriated money under this Interdepartmental Social Hygiene Board, I think it is called. The condition was that this money would be available to the states on the 50-50 basis. Part of that money has been wisely expended, I think, especially that under the direction of the state boards of health, because they have an organization in the states already, and they can administer that fund wisely—that part that was allotted to the Public Health Service. The legislatures come along and they make an appropriation.

Say a state is to receive \$20,000 for its allotment, the legislature makes an appropriation of \$20,000 to match that, but they put the proviso in there that it is so to match the Federal appropriation. Now, Congress some day, as we are doing today, will find out, or conclude, that it will not appropriate any more funds. The money appropriated by the states is then not available, because it has been made contingent upon an appropriation by Congress. And the whole service falls. That is exactly what is going to happen under the activities heretofore authorized. As I understand, a certain amount of the \$1,000,000 appropriated, under the subtitle, "Interdepartmental Social Hygiene Board," was to be expended under the direction of the state boards of health on a 50-50 basis. The legislature makes an appropriation to match the allotment of \$25,000 or \$40,000 or \$50,000 or whatever it happens to be. Many of them, so far as I am advised, so worded their appropriation that it is not available unless they get the Government's 50 per cent. The legislatures adjourn and do not meet for two years, and the appropriation by Congress goes out on a point of order, or it is not the judgment of Congress, that the appropriation shall continue.

The Chairman. The time of the gentleman from Mississippi has expired.—(J. A. T.)

Supreme Court. The Harrison Anti-Narcotic Act.—The Supreme Court of the United States has decided that the issuance of a prescription for a habit-forming drug by a physician not "in the course of his professional practice only" is a sale of the drug and a violation of Section 2 of the Harrison Anti-Narcotic Act. The prescriptions were issued by the defendant, a physician, to persons who were not his patients and not previously known to him and who were professed drug addicts.

The defendant was a Chinese physician of Pittsburgh and registered under the act so as to be allowed to dispense or distribute opium and its derivatives without a written order in official form "in the course of his professional practice only." The evidence tended to show that he worked in collusion with a particular drug store in Pittsburgh. He was convicted and appealed to the U. S. Supreme Court on a writ of error on the ground of the unconstitutionality of the Harrison Anti-Narcotic Act. The Court ruled that his acts were sales of the drug and not prescriptions within the bounds of his professional practice and so upheld the verdict. The complete opinion is given in the United States Public Health Reports for December 24, 1920.—(*J. A. T.*)



Colorado.—Bills relating to the public health were introduced into the Legislature almost at the moment of its convening. One bill, that presented by Dr. Minnie C. T. Love of Denver, would provide for a state industrial home and training school for women suffering from venereal diseases and addiction disease. Another bill, with the same sponsor, would penalize a woman of legal age who lures a minor youth into improper relations. Senator W. W. King, a physician of Cripple Creek, introduced a bill to make more rigid the requirements governing therapy. He claims that under present laws juries will seldom convict quacks because it is argued that the statutes are not applicable. Representative Iver H. Dailey has presented a bill which will bring chiropractors under the control of the State Board of Medical Examiners. Representative George A. Pughe is sponsor for a bill in the House to make a two-tenths mill tax levy to raise \$600,000 to meet the Rockefeller offer of coöperation in building the

University of Colorado School of Medicine, now in prospect. Senator Walter F. O'Brien of Leadville is responsible for a bill making it a misdemeanor with serious penalties to refuse to rent to families having children. Senator Hugh Steele of Denver placed before his branch of the State Government a medical inspection bill, the purpose of which is to provide a physician, a nurse and a dentist in each school district, but limiting the amount to be expended on these services to 1 percent of funds available for school purposes. Representative Blackwell's bill provides for licensing wholesale druggists to sell spirituous liquors for medicinal or sacramental purposes and regulating the sales by retail druggists and others.

Of a good deal of importance as indicating the spreading activities of the Medical Liberty League, Senator John Stephen has presented a bill that provides that everyone shall have the right to choose any kind of medical treatment he desires. This bill would virtually abolish compulsory vaccination.—*Dillon.*



District of Columbia.—S. 4780 was introduced into Congress, which governs the District, by Mr. Fletcher on January 5. It is a bill to regulate chiropractic. It provides for a board of examiners, who shall represent the various schools of chiropractic. Practitioners are to be licensed after examination. According to the provisions of the bill anyone with any kind of an education or no education at all can get a license. It represents the vicious type of short-cut to the so-called practice of medicine. The bill was referred to the Committee on the District of Columbia.—(*J. A. T.*)



Indiana.—There is before the State Legislature at the present moment a full-time health officer bill. Its general features are that it is permissive and not mandatory, that any county may establish a full-time health officer and a full-time nurse on following certain legal courses; that counties with a population of 10,000 or more may unite in such action and that cities of 10,000 population may by ordinance provide for such health officer and such nurse. The term of these officers and nurses shall be four years

and the appointments shall be made from an eligible list provided by the State Board of Health. A provision of the bill requires that county health commissioners, joint county health commissioners and county and city nurses appointed under the bill shall give their entire time to the work and shall not engage in the practice of medicine or nursing or actively in any other profession or business. The powers and duties provided in the bill are essentially the same as those now existing, the salaries are to be fixed by the appointing powers, the county commissioners or the city councils. Counties and cities are empowered to establish and maintain bacteriological laboratories.

The bill is opposed by various agencies which have opposed legislation in the past here and in other states. It is said that there are four hired lawyers in the state organizing "Leagues for Medical Freedom," with the argument that the regular medical practitioners are conducting a battle against all other cults. The result of these efforts is a flood of letters to the members of the legislature which cannot help having influence on their views concerning public opinion.

The defeat of the bill last year designed to secure pure milk in the state is credited to the same agencies. The bill required that milk should not be sold for domestic consumption unless it was from tuberculin-tested cattle, and collected in a cleanly way, or else pasteurized.

House Bill No. 140, the Nurses' bill, provides in the first place for an educational director, who is to assist in establishing the courses for training schools; next, it permits specialization during the third year of training in public health nursing, such as executive work, infant welfare, etc.; and third, it permits the training of attendants and the registration of the same. The control of registration of nurses remains in the hands of women who are registered nurses.



Ohio.—In Ohio the courts have upheld compulsory vaccination. The *Cincinnati Sanitary Bulletin* gives these facts: On November 22 the Board of Education voted to exclude children from school for failure to be vaccinated. A case came for trial in the Juvenile Court under a section of the laws which defines a dependent child. Judge

Charles W. Hoffman sets forth the legal points and holds that the Board of Education has a right to exclude children from school for non-vaccination; that parents of children excluded cannot be prosecuted under the compulsory vaccination act, but at the same time exclusion does not relieve parents of their obligation to provide a proper education for the children. On trial of the case, the Court decided that failure to comply with requirements of the Board of Education which caused the child to be excluded from school constitutes a negligence to provide proper education for the child. Being a novel case, the court decided that it would not declare the child to be dependent and thus made a ward of the Juvenile Court until further opportunity had been given to his parents to comply with the requirements of the Board of Education. A definite date was set in the future for the declaration of the child to be dependent, but if by or before that time the parents had made proper provision for giving the child his education the case would be dismissed.



Texas.—The following legislation is under way, being represented by bills now before the Legislature:

An act giving power to the State Board of Medical Examiners to revoke the licenses of physicians who have been convicted of felony; an act to regulate and make sanitary buildings and rooms used and occupied as a bakery for the manufacture of bakery products; an act to regulate the operation of hotels, cafes, restaurants, dining cars, other eating places, bakeries and meat markets; an act to regulate the operation of barber shops and beauty parlors; an act to appropriate \$300,000 for the establishment of a State Tuberculosis Sanatorium for negroes; an act to transfer the Dairy and Pure Food Department to the State Health Department; and one to amend the nursing law and raise the standard of nurses.



Texas.—M. M. Carrick, M. D., Colonel, Medical Corps, U. S. A., has been appointed State Health Officer of Texas by Governor Neff and will assume his duties as soon as he secures his release from service. He succeeds Dr. Oscar Davis, who was appointed by Governor Hobby.

STATE HEALTH NOTES—GENERAL

National.—At a meeting of a number of national voluntary health agencies held in Washington on December 10, 1920, a National Health Council was created, a form of organization approved, and a constitution and by-laws adopted. In accordance with the by-laws adopted by the Council, each member organization has appointed one representative and one alternate. The original members, with corresponding representatives and alternates, are as follows:

American Public Health Association. Representative: Dr. Lee K. Frankel. Alternate: Dr. M. P. Ravenel.

American Red Cross. Representative: Dr. Livingston Farrand. Alternate: Dr. E. A. Peterson.

American Social Hygiene Association. Representative: Dr. William F. Snow. Alternate: Mr. Bascom Johnson.

Council of State and Provincial Health Authorities. Representative: Dr. C. St. Clair Drake. Alternate: Dr. E. R. Kelley.

Council on Health and Public Instruction of the American Medical Association. Representative: Dr. Watson Rankin. Alternate: Dr. Frederick R. Green.

National Child Health Council. Representative: Dr. Philip Van Ingen. Alternate: Mr. Courtenay Dinwiddie.

National Committee for Mental Hygiene. Representative: Dr. Thos. W. Salmon. Alternate: Dr. Geo. H. Kirby.

National Organization for Public Health Nursing. Representative: Miss Edna L. Foley. Alternate: Miss Mary S. Gardner.

National Tuberculosis Association. Representative: Dr. Charles J. Hatfield. Alternate: Dr. J. Alexander Miller.

The by-laws provide that "other national health organizations may hereafter be elected to membership by two-thirds vote of the members." Provision is made for advisory members, and it is probable that the International Health Board, and official agencies like the U. S. Public Health Service be associated in this way with the Council.

The organization conference on December 10, referred to above, approved of the

following list of activities, as indicating the legitimate field in which the Council might function:

1. A special information bureau.
2. A legislative bureau.
3. The coördination of health activities.
4. Periodic joint conferences.
5. A statistical bureau.
6. The development of educational health material.

The Council is the outgrowth of many efforts in past years to coördinate national voluntary health organizations, in which the A. P. H. A., the A. M. A. and other agencies were interested. With the financial aid of the Red Cross, Dr. D. B. Armstrong carried out a health coördination study during the summer of 1920, under the direction of Dr. Charles J. Hatfield, Dr. Watson Rankin and Dr. Livingston Farrand.

The officers elected at the December meeting are: Chairman, Dr. Livingston Farrand; Vice-Chairman, Dr. Lee K. Frankel; Recording Secretary, Dr. C. St. Clair Drake. The election of a treasurer was deferred until further consideration could be given to the whole question of financing the project.



Arkansas.—Dr. J. T. Clegg of Siloam Springs has resigned as a member of the State Board of Health, and Dr. Leonidas Kirby, of Harrison, has been appointed his successor.

The following members of the State Board of Health, whose terms expired December 21, 1920, were appointed to succeed themselves for four years: Dr. F. O. Mahoney, El Dorado; Dr. O. L. Williamson, Marianna; Dr. H. L. Montgomery, Gravelly.

The 75-bed, fire-proof building, formerly occupied by the Boys' Industrial School, has been turned over to the State Health Officer, by a proclamation issued by the Governor, Charles H. Brough, to be used as a State Isolation Hospital for Venereal Diseases. The next general assembly, just convened, will be asked to make an appropriation to repair, equip and maintain this hospital for the purpose stated. It is thought that this is the first state institution for this purpose established in the United States.

California.—In the Bulletin of the California State Board of Health attention is called to the existing need for public comfort stations which is accentuated by prohibition. Dr. W. J. Hanna, City Health Officer of Sacramento, presented a summary of the situation at the recent conference of state, county, and municipal health officers at Chico. He notes that, since the prohibition law went into effect, saloons on prominent corners of our cities have disappeared and have been replaced in the majority of cases by cigar stores and various lines of business which fail to provide facilities for men; this also applies to the numerous road houses along our highways which formerly provided accommodations for the public. In the construction of state highways this provision has evidently been entirely overlooked and has caused distress and embarrassment on many occasions.

It is the duty of the state and municipalities to look after the health and comfort of the people, but in the past this important matter has been given little or no consideration.

Dr. Hanna suggests that to overcome the objection to comfort stations being possibly too prominent in congested sections of a city it might be found advisable to have them underground with entrance similar to those of a subway. The ideal comfort station is one that is equipped with drinking fountains, toilets, telephone booths and rest rooms.

On the public highway, stations could be placed at intervals of twenty-five miles and be under a caretaker who could visit them daily, looking after sanitary conditions and general equipment; a work which could be accomplished by one man, with the aid of a motorcycle, who could cover a long stretch of country.



Illinois. Dr. Rawlings Appointed Director.—Dr. Isaac Donaldson Rawlings of Chicago has been appointed by Governor Len Small to succeed Dr. C. St. Clair Drake as Director of the Illinois State Department of Public Health. The State Senate immediately confirmed the appointment and the change became effective February 1, 1921.

Dr. Rawlings accepted the commission of Director of the State Department of

Public Health after 20 years of successful public health service in connection with the Chicago Department of Health. He graduated from the College of Medicine of Northwestern University in 1893 and rounded out his medical education with post-graduate courses in the medical universities at Vienna, Berlin, London, and Dublin. Since that time he has taught medicine for many years at Northwestern University. In 1918 he was appointed by the Federal government, as a dollar a year man, to direct the activities of 200 doctors of Chicago in connection with the influenza pandemic.

Dr. Rawlings was born April 29, 1869, at Carrollton Ill., and spent his youth in Jacksonville, Ill.

The Semi-Annual Report from the Division of Laboratories of the State Department of Public Health, shows that 25,588 specimens were examined in the diagnostic laboratories during the last six months of 1920. This represents practically double the volume of diagnostic work done by the State laboratory during the same period last year and more than four times that of corresponding periods in former years.

The Community Council of Moline announces the addition of a dietitian to its corps of public health workers. This service will be a distinct asset to the nursing service carried on by the eight nurses now employed. It will be especially helpful in connection with the medical inspection of school children and the infant welfare clinics. Moline now maintains one of the most efficient health centers in the country.

During the past year it has established clinics for the removal of tonsils and adenoids, for tuberculosis, and venereal diseases. These are in addition to infant and child welfare clinics already existing. All of these clinics are housed under one roof.



Indiana.—The Legislature of the State of Indiana has expressed its appreciation of the quality of the work of the State Board of Health by various increases in the appropriations over those of last year. This in the face of the evident tendency to economy is of interest. The different additions that have been made for the current year in the appropriations include \$10,000 more for the Tuberculosis Division, and

\$10,000 for the Division of Infant and Child Hygiene, while for the Venereal Disease Division the increase is \$13,000 and \$25,000 besides for a special program to be cared for between March 1, 1921, and October 1, 1921. The salary of the Secretary has also been bettered by \$1,000, bringing it up to \$4,000.



Kansas.—The December Bulletin of the Kansas State Board of Health is largely devoted to the work of the health car, "Warren." This useful aid to public health education has felt the pressure of hard times, and in personnel its resources have been lessened while on account of increased cost of mileage and moving it has been able to stop only at longer intervals. This is unfortunate, since it can often do its most desirable work at the small country village to which other agencies are denied. The general line of helpful work that is undertaken is first, the awakening of the community to its health needs and the possibilities of caring for them; individual help to mothers, a very useful feature and in many places not supplied in any other way; general health instruction of the adult public and of the children; and finally substantial aid in the determination of the physical disabilities of the young people.



Maine.—The Maine Public Health Association has made a determined appeal to the State Legislature this year for adequate support of proper health measures. It is making this effort through the individual letters to legislators from interested citizens who are informed in the matter by the Association. Three points are made in the appeal; that it is necessary to protect childhood from disease and that health and education must be the foundation stones of any real progress. At the present moment it costs about \$1,000,000 annually to care for children and others in institutions, and these figures are constantly increasing. It is possible, it is argued, to lessen this burden by preventive work and the Legislature is urged to back the State Health Department in its programs. There is much to be done in the state, there being, for example, no less than 47 communities that are without a physician. The method

of alleviating a portion of this distress by means of the winter nursing service in the archipelago along the coast of the state has already been made known, through the *December NEWS LETTER*, and service such as this may be of greatest benefit to the health of the citizens.

Since the health law went into effect a year ago requiring every town in the state to employ at least a part-time health officer, 11 women have been appointed part-time health officers in different communities.

The report of the diagnostic laboratories of the State Board of Health show an increase in examinations to more than double the number in 1918, being 13,191 against about 6,000. A fair share of this is in the greater number of examinations for venereal diseases than formerly. The laboratory service is free to citizens of the state.

Two important special pieces of work have been carried on the past year, the inspection of hotels and lumber camps and the testing of domestic water supplies. Maine has many lumber camps and these wherever they may be situated in any state have been health risks to the rest of the state. Maine derives so much revenue from summer visitors that it has been deemed a wise economic movement to look after the sanitary conditions of the hotels.



Michigan.—The city of Flint, Mich., is undertaking to secure a better supply of milk by means of educating the milk producers to the important points in sanitation and hygiene connected with their business. Letter No. 39, which bears the imprint of February, 1921, calls attention to the fact that the stabling of cows for the winter months is always accompanied by a large increase in the sediment found in the milk supply. The reason for this is that the cows are at this season absolutely subject to their herdsmen. If they neglect the animals the latter will show the results in the lessening of the supply of milk and the presence of dirt. Since one impure consignment of milk may affect the whole supply of a milk dealer for the day, uncleanness is much more than a matter in which the responsibility ends with the farmer. "A person who willfully neglects to take proper precautions with milk," the

letter goes on to say, "is not only doing himself and his family an injury, but is imposing an injustice upon every other milk producer by creating a feeling against milk in general."



Minnesota.—The Division of Venereal Diseases of the Minnesota State Board of Health makes report of its proceedings for the past year and in connection with this it calls attention of physicians in the state to the nature of the Wassermann test. It calls attention to the fact that some specimens have been divided by the physician and submitted under different names with perhaps opposite reports on the two portions. In this connection the physicians are referred to the paper on the Wassermann test in the *Journal, A. M. A.*, for January 1, 1921, by Rhodenburg, Garbat, Spiegel and Manheims. The statistical summary of the work of the Division shows that there are approximately 3,000 physicians in the state, of whom 1,500 have reported venereal disease cases during 1920. In the clinics of the Division 2,261 patients have been given 32,602 treatments; 3,866 cases have been handled by the Social Service Subdivision, and many sources of infection have been examined and treated. Laboratory examinations have increased from 200 in January, 1920, to 2,000 in December. The Educational Subdivision has distributed 167,000 pamphlets; has given 108 lectures with total audiences of 3,200 persons; has had 132 showings of educational films to more than 40,000 persons and nearly 500 exhibitions have been given with an attendance of more than 73,000. Educational work has been carried on in 178 towns in the state.



New Jersey.—Some 56 nurses are in attendance at the post-graduate child hygiene course given at the State Normal School in Trenton in coöperation with the State Department of Health. The State is interested, since there is opportunity to create a staff of nurses who carry into their work increased interest and a broader knowledge of the problems to be encountered. With these women for the leaven it is hoped that public health education may become a vital force in the state.

The Bureau of Child Hygiene, which is

the department of the State Board undertaking this work, has prepared a "Bibliography of the Care and Feeding of Infants and Children," which is tentatively published for the information of nurses and teachers, for fathers and mothers, for boys and girls, for the school committee and superintendent and "for everybody," to which are appended a few titles for social workers and a few handy lists, one of these being the names of publishers who have specialized in various divisions of health literature. The Bureau will be glad to have practical suggestions towards bettering the bibliography in later editions.

The Trenton Branch of the Red Cross has donated the sum of \$7,000 for a malnutrition demonstration in the schools of that city. The schools range from a minimum of 8% malnourished to a maximum of 43%, about one-fifth of the children being 10% below the normal average weight for height. The purpose of the demonstration is to accumulate sufficient data so that nutrition may be included as a regular item in the school program.



New York.—The plans for the meeting of the Medical Society of the State of New York now include making the week a health week in the Borough of Brooklyn. The date of the meeting is set for May 2-5, 1921, and the project is receiving the hearty approval of the State Department of Health through Commissioner Hermann M. Biggs, who promises coöperation on the part of the State and of the New York City Department of Health, which, through Commissioner Royal S. Copeland, offers every assistance in giving emphasis to the undertaking. There is to be a very ambitious exhibition in connection with the meetings, the gathering place to be the Armory of the 23d Regiment in Brooklyn.



Virginia.—During February more than one thousand local leagues, which are members of the Coöperative Education Association of Virginia, have been following a program of health education, prepared by State Health Commissioner Ennion G. Williams. Sanitation is emphasized, as is also prevention of nose and throat diseases, care of domestic water supplies, necessity for vaccination and the benefits of good ventilation.

INDUSTRIAL HYGIENE AND OCCUPATIONAL DISEASE

Abstracted by Drs. E. R. Hayhurst and E. B. Starr.

Comparison of an 8-hour Plant and a 10-hour Plant.—Goldmark and Hopkins make a four-page reply to criticisms which have appeared on their bulletin, No. 106, United States Public Health Service, which discussed the comparison of an 8-hour and a 10-hour plant, for reasons given in this reply. The writers contend that the plant running on the 8-hour schedule showed a remarkably steady maintenance of output; the factory running on the 10-hour schedule showed a marked decline. Under a shorter schedule, their findings warranted the conclusion, that human beings work nearer to capacity, and that greater concentration of effort is the conclusive response to shorter hours. The writers strongly defend the care and exactness with which the original data were studied and the conclusions drawn, making allowance for the difference in character of the two plants compared. In the case of both output and accidents, the difference in hours persisted as a steady factor in the contrast between the two plants. Thus, in respect to output, the quality of labor at the two plants may be considered practically on a par. In respect to accidents, the quality of the management of the two plants may be considered practically identical.

"Thus, when we eliminate the variant of labor, we find differing management insufficient to explain our contrast in working capacity as tested by output. When we eliminate the variant of management, we find a differing labor force insufficient to explain our contrast in working capacity as tested by accidents. For the major factor of the contrast we are brought back to the differentiating element steadily present in our study, the length of hours." "The writers of the Bulletin, on the evidence in hand, stated conclusions as indicated to their minds by the facts, inviting further and more inclusive research to confirm or refute them."

Inasmuch as the value of the report has been questioned, the writers state: "To sum up, then, the value of the report may be said to lie in (1) the volume of authoritative fact presented, (2) the new or revised technique of the investigation, (3) the precision of

presentation aimed at, and (4) the stimulus which it in turn, following the British reports, may exert in leading to further exact research into the central and most neglected problem of production, the human factor."—Josephine Goldmark and Mary D. Hopkins, *The Journal of Industrial Hygiene*, Volume 11, No. 9, January, 1921, pages 348-351.



New Features in Connection with the Inhalation of Rock Dust.—"Development of silicosis in the absence of exposure to risk had previously been suspected, now it is a proven fact," according to the report published from the Rand. "Miners of many years' standing, who had but slight apparent damage to the lungs on leaving, showed definite physical signs upon their return from military service and in more than one instance a miner of long service, who left with apparently a normal chest, returned in a condition of fully developed primary silicosis."

"Tuberculous infection will often bring about a rapid development of silicotic changes in the lungs of a miner who has habitually inhaled siliceous dust but who may have hitherto shown little or no indication of pulmonary damage.—In these cases one might almost say that the *tuberculosis has 'predisposed' to the silicosis*; and such a statement is, indeed, true in its literal sense with respect to men who are the subjects of tuberculosis before they begin hard-rock mining." The statistics accumulated do not yet indicate any beneficial results from the recent improved conditions of underground work, but same are hardly yet to be expected. "The value of initial examination, which commenced September, 1916, and has been applied to 5175 men (of whom 2741 are known to be in underground employment), is clearly shown by the fact that only one has developed tuberculosis and no one silicosis. If this remarkable record is maintained the disease will be swiftly eradicated from the mines."

Abstract by *The Lancet*, January, 1921, No. 5079, page 37 from the *Annual Report of Miners' Phthisis Board, Union of South Africa*. Capetown, 1920.

Industrial Fatigue.—It is not easy to define the term "Industrial Fatigue." The term embraces not only fatigue met with as the result of work in other walks of life, but embraces the conditions of inefficiency in the factory whether due to mechanical work or to the worker himself. The actual cause of fatigue falls into two categories: the using up of available energy-producing material; and the accumulation of waste. The first of these is not the most important since the fatigue of muscles and nerves is much less often due to the exhaustion of stores of available energy which are plentiful in the body than to "fatigue bodies" affecting the extraordinary delicacy of nerve cells. Symptoms similar to fatigue sometimes appear in an individual where the tasks performed seem inadequate to explain them. For instance, very numerous conditions found in factory life which are likely to result in a disturbance of the digestive function so that partial poisoning of the body arises from abnormal digestive products. The preparation of food by the wives of laborers is an important phase. Factory lighting, heating, ventilation and the distraction due to noise (also noise occurring during hours of sleep) are all important side features. Unlike engineers' machinery, the machinery of the body never stops. There is another process in repair of the inanimate machines, viz., "*recovery*," which is probably due to the renewal of energy-producing material and a sweeping away of waste. When an organ or part functionates Nature may send five times the ordinary amount of blood to that part. It must be realized that *recovery is always in progress*, even during the most arduous work, and it is this fact that makes possible any prolonged spell of labour.

Tests for fatigue are difficult for it is impossible to say "how tired" a person is, or to express the same even in practical terms but it is possible to obtain a *comparative* expression, and to state definitely that a *person is, or is not, more fatigued* at one moment than at another. Thus each person can be made to serve as a standard to himself, with which he is compared. While the value of this method is limited yet the real question is whether a person is less or more fatigued at one moment than at another, so that the method is capable of extensive use, and is more reliable than any estimate of the condition based upon output.

It is true that fatigue is an important limiting factor of output, and where readings are taken over a sufficient length of time and from a sufficiently large number of persons, valuable indications may be secured in output; also from the short trend of wages. A greater significance may be gained from the examination of sickness returns which are the measure of diminished resistance of employees. In the same way records of lost time and numbers of persons late are factors. Finally, accidents as an index of the grade of fatigue is important, but accidents are dependent on so many causes that they are misleading as a sure guide.

The proper length of the working hours is a question which is yet beyond our reach. The ideal is not merely output, since the workers' welfare is equally important. "How great must have been the astonishment of those who, for years, had sacrificed everything to great output, and in pursuit of it had lengthened hours till the workers groaned, to find at last when shorter hours were introduced that output was increased! Yet a little thought might have shown us the probability years ago; it is only because the physiologist, expert in knowledge of the human machine, was not consulted, that progress was delayed. And today the same may be said of the demand for any general statement with regard to the proper length of the working day. We may say a man should not be tired beyond a certain point; the amount of work that will produce that tiredness will vary enormously with conditions."

A factory making elastic webbing employed 300 men and women, and records were taken over a five months' period. For the first month the hours were 56¾ per week, for the rest of the period 50¾. During the long hour period of April more persons were late and more time was lost. Saturday's lost time was remarkable and probably due to deliberate action on the part of certain workers who preferred to devote themselves to their gardens rather than to attend the mill. However, the cause of Saturday's lost time ceased to be of importance as soon as working hours were shortened. The "Monday effect" of lost time was noticeable throughout the five months and was relatively greater after the change to shorter hours than before. This seems to show that this Monday effect is due to some other cause than merely length of working

hours and consequent fatigue. It is of sufficient magnitude to affect output appreciably, and it merits further inquiry on purely economic grounds. A most important result of the change to shorter hours (six hours less per week) was the difference between "overload" and "not overload." The workers were "overloaded" under the long hours as shown by the large variations in the lost time and late curves, by their discontent and by their agitation for shorter hours, which disappeared on shorter hours, being replaced by contentment, flattening out of the curves, and by the fact that output was increased. The indications are that the "best length of week" and the "optimum load" had been approached. Finally the shortened day occupation became more productive than the longer. The increase was moderate, but that it should occur at all is proof that the old conditions were not ideal; 6 hours taken from the week also was followed by a great decrease in sickness, and it is reasonable to believe that cause and effect were here.

In another plant hours were shortened from 54 to 48, and there followed a remarkable increase of output—44% and at the end of the period of observation showed no signs of dropping. "How can this be possible when working hours are less?" The answer is simple, and depends once more on hours lately wasted. During the period of long hours the average time lost per week by each worker was from 10 to 12 which average fell to 5 on the shorter work period so that the actual number of hours worked per week remained the same.

"What is required at present is that investigators should enter the field and carry out researches in particular directions, in order that our knowledge may be widened and made applicable to all industrial processes." These investigations must be carried out not by individuals, since no single person possesses the wide knowledge necessary, but by groups of individuals. A. F. Stanley Kent, *Jour. of State Medicine*, Vol. XXXVIII, No. 9, Sept. 1920, pp. 261-73.

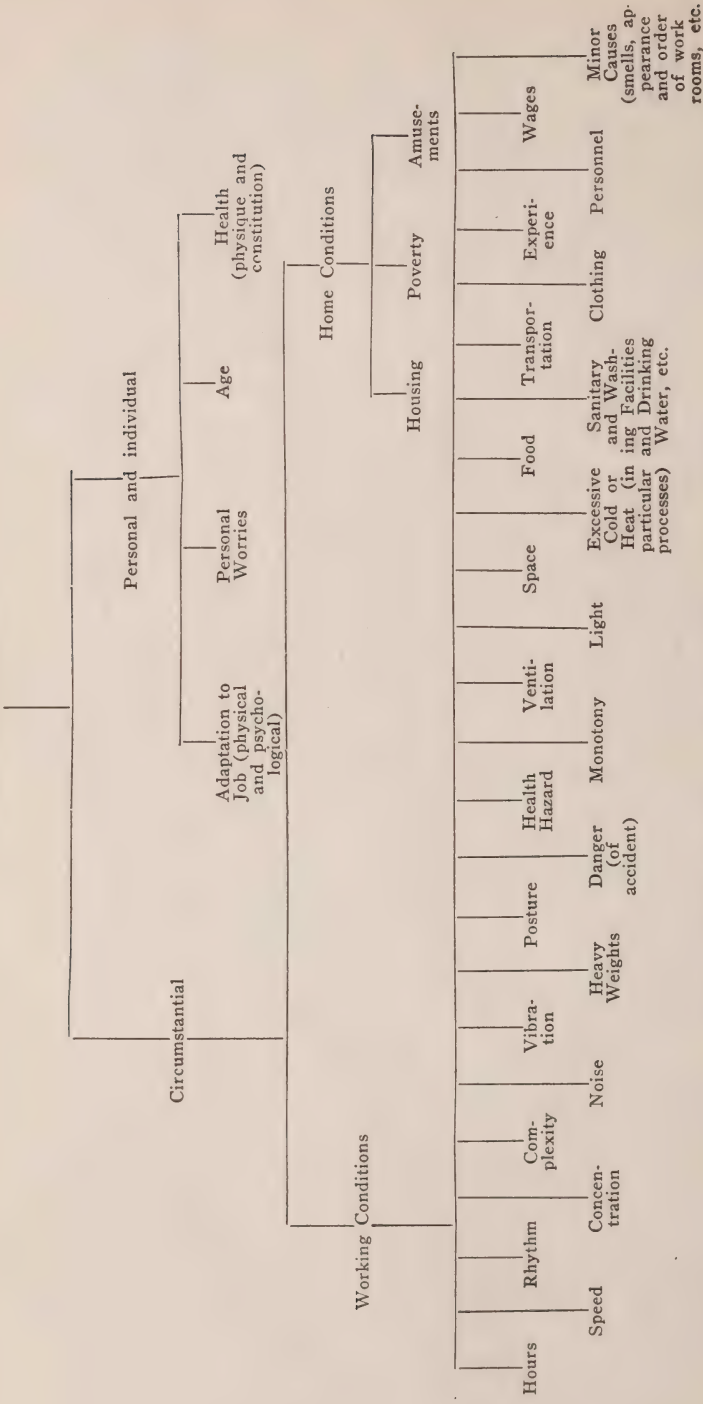


The Common Sense Summing Up of Preventable Causes of Fatigue.—The accompanying diagram "Factors in Fatigue"* is from

*See Page 298.

the reprint from "*Industrial Canada*" for December, 1920, and was prepared by Mr. R. N. Hutton, Secretary, Committee on Industrial Fatigue, Honorary Advisor Council for Scientific and Industrial Research, Toronto, Canada. —The writer states the chief cause of fatigue is the question of *adaptation (both physical and psychological) of the worker to his job*. Other causes, more concrete, are those connected with working conditions and those connected with home conditions. Six groups of causes are stated as follows: (1) Hours of Work.—It obviously does not make for economic production habitually to pay full wages to employees for time when owing to fatigue they are not doing full work. Purely for its own prosperity it is necessary for each industry to discover what is the "right" length of working day for its employees. Common sense at the bottom of all questions of hours of work is well seen in a statement of a British foreman about Sunday work at double pay during the war. He held that it "gave six days' output for seven days' work at eight day's pay." (2) Environment, as applied to ventilation, light, space, extremes of temperature, disagreeable smells and psychological factors. (3) Physical and Nervous Strain as regards speed, rhythm, rest periods, concentration of the faculties, complexity of movements, lifting, posture, noise and vibration, monotony, accidents and health hazards (poisons). (4) General Health Maintenance as regards food and its preparation, sanitary facilities, transportation, and suitable clothing. (5) Psychology—*Mal-adaptation of a worker to his job*—inherent inaptitude, inexperience, personnel, such as type of foremen and "anti-social" character of certain workers, and erratic management. (6) Wages—"No sane employer who knows his own nature and judges his employees accordingly will expect whole-hearted and full strength service from harassed, underfed, badly-housed, insufficiently clothed men and women." Holding the actual wages paid as one factor, in the majority of cases a more subtle factor concerns education in the spending of the wage. Both call for consideration and *in his own interests* the second is as much the employer's concern as the first.

FACTORS IN FATIGUE



(Common Sense Summing Up of Preventable Causes of Fatigue)

PUBLIC HEALTH LABORATORY NOTES

Abstracted by Arthur Lederer, M. D.

Involvement of Nervous System During Primary Stage of Syphilis.—Deviations from the normal in the spinal fluid of 221 cases of syphilis in which only the chancre was present were found in 49 cases, or 22% of the cases examined. Increase in globulin and albumin virtually parallel was the most constant of the abnormal findings, occurring in 25 of the 49 cases. Pleocytosis was the next most frequent finding, occurring in 12 cases. The positive Wassermann test in the fluid occurred less frequently than the other two findings, being present in but eight cases. Within certain limitations any single one of the above-mentioned deviations from the normal occurring alone must be regarded as evidence of early central nervous system involvement.—Udo J. Wile and Clyde K. Hasley, *Jour. A. M. A.* 76, 8, (1921).



Precautions Necessary in the Selection of a Donor for Blood Transfusion.—All individuals may be grouped broadly into four main groups. These groups are established by the presence of two "chief" agglutinins in the serum and receptors for these agglutinins in the cells. Besides "chief" agglutinins, "minor" agglutinins have been demonstrated. Ninety-seven percent of adults have agglutinins in their serums. They are, however, present in 13% of new-born infants. Only 25% of new-born infants have cells that can be agglutinated, as compared to 50% among adults. The full quota of agglutinins and receptors is acquired between the third and fourth years of life. Incompatibility between the blood of a mother and her new-born infant occasionally occurs. It is unsafe, therefore, to omit testing the blood preliminary to transfusion, even though the mother should act as donor. It is not advisable indiscriminately to use the so-called "universal donor" as severe reactions have been observed following the use of donors of Group IV for patients of other groups. The rouleaux-formation substance, even though acting on the donor's cells, is ap-

parently harmless, and no untoward results have been seen following such transfusions. It is unsafe to perform a transfusion, relying simply on the fact that the donor and patient are of the same group. Preliminary to transfusion, the blood of every patient should be grouped and then tested directly against that of the prospective donor.—Lester J. Unger, *Jour. A. M. A.*, 76, 9, (1921).



The Wassermann Test and Its Limitations.—The Wassermann test is not infallible, and its value is greater when its limitations are clearly comprehended. Some of these limitations are dependent on technical details with which the clinician must familiarize himself until the time arrives when all serologists agree on a standardized technic. Other limitations are dependent on the biologic processes involved. Accepting the test as diagnostic in the vast majority of cases, it also serves as an indication of the success of treatment. The data presented emphasize that the earlier treatment is instituted and the more vigorous the early treatment is, the greater the likelihood of obtaining a serologic cure.—G. L. Rohdenburg, A. L. Garbat, Leo Spiegel and P. J. Manheims, *Jour. A. M. A.*, 76, 14, (1921).



Vital Staining of the Metachromatic Granules of the Diphtheria Bacillus.—By the use of Nile Blue, 9 parts to 1000 of saline, the authors were able to stain live diphtheria bacilli. A hanging drop of the culture, made faintly blue by the dye, shows in 5 to 15 minutes, blue bacilli with red to violet granules.—Arloing and Richard. *C. R. Soc. Biol.* 1920, 83, 267.



Abderhalden's Test and the Diagnosis of Renal Tuberculosis.—The results with the test were disappointing. It was impossible to distinguish an acute or chronic nephritis from renal tuberculosis.—F. Wauschkuhn, *Deutsche med. Woch. schr.*, 46, 711 (1920); *Jour. A. M. A.*, 75, 967. (1920.)

Simplified Culture Medium; Caseinogen.

—The preparation of a dry nutritive powder from caseinogen does not require the addition either of peptone or extractives but may be made up into solid nutritive medium merely by the addition of agar and normal saline or tap water. It is obvious, therefore, that it would be extremely useful for field workers both on account of its portability and the extreme ease with which it can be made into culture medium. It is suggested that the name "trypsinoids" be given to the powder. Similar experiments with ordinary brewers' yeast fresh and dried are described but it would appear under the conditions tried that caseinogen yields the more nutritive powder of the two.—D. Norris, *Ind. Jour Med. Res., Calcutta*, 7, 704, (1920); *Jour. A. M. A.*, 76, 69, (1921).



Properties of the Hemotoxin of Streptococci.

—The hemotoxin of streptococcus is a labile substance affected by centrifugation or shaking. It is adsorbed by various organic and inorganic substances. Hemotoxin is produced within a wide range of hydrogen-ion concentrations. It is neither in nor on the bacterial cell but is free in the culture medium. It is probably only an enzyme. There are at least two substances which are essential to the medium for the elaboration of hemotoxin, one of which is phosphorus; the other is a substance of unknown composition. The unknown component is present in small quantities in unfiltered muscle infusion, but is more abundantly supplied by blood serum and kidney infusion. This substance is not an albumin, globulin, primary or secondary proteose, metaprotein, or peptone of the medium or enriching fluid. It is water-soluble, is destroyed by boiling in alkaline solution and by prolonged heating, and is removed to a considerable extent by passage through a diatomaceous filter.—Percy D. Meader and George H. Robinson, *Jour. Exp. Med.*, 32, 639, (1920).



Biological Study of the Hemophilic Bacilli.

—The hemophilic bacilli can be divided into two large groups according to the ability of certain strains to produce hemolysis. Both the hemolytic and the non-hemolytic groups may be further subdivided according to the ability of some

strains to produce indole, to form gas, and to ferment certain carbohydrates. The hemophilic bacilli of both the hemolytic and the non-hemolytic varieties when grown in meat infusion broth containing 1% of dextrose reach a final hydrogen-ion concentration of about pH 6.4. In addition, practically all the strains possess the power to reduce nitrates to nitrites.—Ernest G. Stillman and Janet M. Bourn, *Jour. Exp. Med.*, 32, 665, (1920).



Studies on Experimental Pneumonia.

Bacillus influenzae can initiate in normal monkeys an acute infection of the upper respiratory tract which may be complicated by acute sinusitis, tracheobronchitis, hemorrhagic edema of the lungs, bronchiolitis, and bronchopneumonia. This disease appears to be essentially identical with influenza with respect to its clinical course, symptoms, and complications. The etiologic relation of *Bacillus influenzae* to acute sinusitis, tracheobronchitis, bronchiolitis, and bronchopneumonia is established. Although it seems reasonable to infer from the results of the experiments that *Bacillus influenzae* is the specific cause of influenza, a definite conclusion is not permissible, since it is impossible to determine whether the respiratory disease produced in monkeys with *Bacillus influenzae* is identical with influenza or merely similar to it. The experiments are advanced, therefore, as evidence in favor of the etiologic relation of *Bacillus influenzae* to influenza. Virulent influenza bacilli, when injected into the nose and throat of monkeys (*Cebus capucinus* and *Macacus syrichtus*), excite an acute inflammation of the upper respiratory tract, characterized by swelling and hyperemia of the mucous membrane, infiltration of the mucosa and submucosa with leucocytes, desquamation of epithelial cells, and the production of a mucopurulent exudate. The accessory sinuses are often implicated in the infection. Experimental *Bacillus influenzae* infections of the upper respiratory tract are frequently accompanied or followed by bronchiolitis, peribronchial infiltration, and bronchopneumonia with hemorrhage and edema in the early stage, emphysema and bronchiectasis in the later stages. In general, the process closely resembles uncomplicated *Bacillus influenzae* pneumonia in man. The injection

of virulent influenza bacilli directly into the trachea of monkeys induces in them an experimental bronchiolitis and hemorrhagic bronchopneumonia, similar in all respects to spontaneous *Bacillus influenzae* pneumonia. In experimental *Bacillus influenzae* infections of either the upper or lower respiratory tract, the influenza bacillus can usually be recovered during the acute stage by culture, either pure or in association with other bacteria. In experimental *Bacillus influenzae* infections in monkeys characteristic changes occur in the thymus gland—hyperplasia of the follicles, distention of the lymphatic channels, and infiltration of the parenchyma with leucocytes. This enlargement appears to be merely part of a general hyperplasia of the lymphoid structures in the cervical and thoracic regions.—Francis G. Blake and Russell L. Cecil, *Jour. Exp. Med.*, 32, 691, (1920).

✦

Preparation of Collodion Sacs for Use in Bacteriology.—A standardized method is described in detail by which collodion sacs suitable for intraperitoneal incubation and for other bacteriological experiments may be produced in large numbers, sterilized, and handled with convenience and the minimum danger of contamination.—Frederick L. Gates, *Jour. Exp. Med.*, 33, 25, (1921).

✦

A Mechanical Measuring Instrument for Sterile Liquids.—An instrument is described by which aliquot portions of a liquid may be mechanically measured and delivered. It was devised especially for use in immunological experiments, to take the place of a graduated pipette in setting up serum tests. The instrument may be set for any quantity within its capacity and measures sterile liquids without danger of contamination. It may therefore find a wider application in other procedures requiring sterile measurements of small amounts of liquid.—Frederick L. Gates, *Jour. Exp. Med.*, 33, 45, (1921).

✦

Study of the Classification of Meningococci.—The meningococcus, like some other pathogenic species, varies in its agglutination in immune serum, some strains being readily agglutinable while others agglutinate with difficulty in their homologous serum as well as in heterologous serums. The dif-

ferent strains appear to vary also in their action as antigens. In order to secure representative strains, therefore, it was thought necessary to consider the antigenic action as well as the agglutinability of the cultures.—Augustus B. Wadsworth, Ruth Gilbert, and Alice Hutton, *Jour. Exp. Med.*, 33, 99, (1921).

✦

Purification and Concentration of Antigens for Complement Fixation.—Antigens were prepared from the culture filtrates of tubercle bacilli and by extraction of washed and dried organisms with organic and aqueous solvents and from tissues of organs showing tuberculous lesions. A comparison of these preparations by means of the complement fixation test showed that the aqueous extracts were most active antigenically. The antigenic activity of the aqueous preparations and also of the slightly active culture filtrates was increased by means of dialysis and adsorption with serum globulin followed by extraction with alcohol and concentration of the alcoholic extract in vacuo.—Augustus B. Wadsworth and Frank Maltaner, *Jour. Exp. Med.*, 33,

✦

Complement vs. Amboceptor Titrations in the Wassermann Test.—The time of incubation of amboceptor and complement titrations and the time of final incubation before reading the tests, should be the same in any given procedure; the standardization of this incubation period of 15 minutes, is highly desirable. The daily titration of both complement and amboceptor in the Wassermann test, is necessary to a properly balanced hemolytic system.—R. L. Kahn, *Jour. Lab. Clin. Med.*, 6, 153, (1920).

✦

Empyema Containing Diphtheria Bacilli.—The author relates a fatal case observed in a girl, aged 3 years, who presented a purulent discharge from the nose and subsequently developed a left-sided empyema. Bacteriological examination of the pus from the empyema showed streptococci and rods resembling diphtheria bacilli in the smears and diphtheria bacilli in the cultures. On the other hand, the nasal discharge did not show any diphtheria bacilli.—Goldschmidt, *Wien. klin. Woch.*, September 16, 1920; *Brit. Med. Jour.*, No. 3127, (1920).

Milk-Powder Agar for the Determination of Bacteria in Milk.—Formulæ for three agar media are given, two of these media containing skimmed-milk powder with different amounts of peptone and meat extract. The third contains skimmed-milk powder and yeast extract, no peptone or meat extract being used. This may be a distinct advantage if the variation in composition of peptone and meat extract plays an important part in connection with the bacteria count. Any of the skimmed-milk powder media described gives counts very much higher than standard extract agar and the colonies are very much larger. The larger size of the colonies makes the counting process much more accurate. Counts obtained on the powder media with peptone and extract are on the average higher than those obtained on the old standard infusion. On milk-powder yeast agar they may be, in general, slightly lower. With these milk-powder media it is possible to obtain not only a total count, but a count of colonies of strong and weak acid-producing, alkali-forming, inert and peptonizing bacteria. The plates, therefore, give quantitative and qualitative results, at least so far as these groups of bacteria are concerned. The importance of using washed agar in media for bacterial counts will be discussed further in another paper. It is hoped that these media will be given a thorough trial, for it is felt that any one of the three possesses decided advantages over the present standard extract agar.—S. Henry Ayers and Courtland S. Mudge, *Jour. Bact.*, 5, 565 (1920).



Production by Streptococcus Hemolyticus of an Agglutinin for Red Corpuscles Which Inhibits Hemolysis.—The streptococcus considered appeared to be a typical *Streptococcus hemolyticus* when it was cultivated on blood-agar medium, but it had the peculiar quality of agglutinating instead of laking red blood cells when it was grown in broth medium. It seems possible that, on the blood-agar cultures, agglutination of the corpuscles was prevented by the mechanical factor of the solid medium and that accordingly hemolysis took place as usual. The tests noted suggest that the agglutinin for red blood corpuscles was an exogenous product of the bacterial cell and that hemol-

ysin was probably present, but that its action on corpuscles, for some reason not determined, was inhibited by the agglutinin present. Agglutinin production was a transient quality of this streptococcus strain, since it was present in an appreciable amount for only six weeks.—Katharine M. Howell, *Jour. Inf. Dis.*, 27, 565 (1920).



A Clinical Method for the Determination of Blood Sugar in Minute Quantities of Blood.—This method is based on Benedict's most recent technique modified for use with the new microcolorimeter. The instrument was developed by Mrs. R. E. Klett, based on the suggestions by Prof. S. R. Benedict. A description and illustration of the apparatus are given. Results obtained with this method have agreed very closely with the figures obtained by simultaneous analyses in which the ordinary methods, requiring 2 cc. of blood, were employed. As this method is simple, quick and accurate, and requires only 0.2 cc. of blood, it is evident that it should prove valuable to the clinician.—Israel S. Kleiner, *Jour. A. M. A.*, 76, 172, (1921).



The Colloidal Gold Curve in Epidemic Encephalitis.—The authors have been unable to observe any relation between the colloidal gold curves noted and the severity, duration or clinical picture of the disease. However, it does appear that in a large percentage (41%) of cases of epidemic encephalitis chemical changes, whether parenchymatous or meningeal, are present in the central nervous system which produce substances in the spinal fluid able to bring about an abnormal colloidal gold reaction. It has been shown that in other conditions involving changes in the central nervous system alterations in the reaction of colloidal gold to the spinal fluid are analogous to those just described as occurring frequently in epidemic encephalitis. Abnormal colloidal gold reactions are evidence of pathologic changes and not of specific etiology. The diagnosis of etiology by means of the colloidal gold reaction cannot be made without confirming clinical evidence based upon the progress and symptomatology of each case.—Thos. K. Davis and Walter M. Kraus, *Am. Jour. Med. Sciences*, 161, 109, (1921).

Comparison of the Potency of Polyvalent Antimeningococcus Serum.—The potency of a polyvalent antimeningococcus serum, as tested by its agglutination titer, was sacrificed by immunization with a large number of strains of the meningococcus. By immunization with a limited number of representative strains, four or six, carefully selected on account of their antigenic and agglutination properties, the potency was increased three to tenfold without sacrificing the polyvalency; that is, as tested with at least 70 heterologous strains of the meningococcus. The agglutination titer, unfortunately, is not an entirely satisfactory criterion of therapeutic potency, but it is the only practical method available that determines also the polyvalent action of antimeningococcus serum.—Augustus B. Wadsworth, *Jour. Exp. Med.*, 33, 107, (1921).



Diagnosis of Gonorrhea in the Female by Staining Methods.—When dealing with inflammatory lesions of the lower genital tract, it is advantageous to determine the type of infection present. During the acute stage of the gonococcal infection the diagnosis is generally made without difficulty, as the clinical signs are more or less significant; if doubt exists, film preparations can be depended on. Because of the certainty with which a positive diagnosis by staining methods can be made in the acute stage, and the many difficulties encountered in the chronic stage, it is especially important that the variety of infection present be ascertained during the acute stage. Unfortunately many cases are not seen during the early stages, and a positive diagnosis is therefore arrived at only with difficulty. During the chronic stage the clinical signs are less characteristic than during the acute stage. The examination of film preparations is less satisfactory. The presence of gonococci can be demonstrated by film preparations from every case if a sufficient number of correctly performed examinations are made. A single negative smear examination is without significance. In such a case the chances of demonstrating gonococci are about three or five to one according to the skill of the examiner. Even under the most favorable circumstances, positive film examinations can be obtained in only a relatively small proportion of cases. Unless

safeguarded by the Gram stain or one of its modifications, smear examinations are valueless. Even with Gram's stain, errors in diagnosis may occur. Differences in the thickness of the preparations, slight over-staining or understaining, etc., may lead to extremely misleading results. Owing to the many difficulties surrounding this form of diagnosis, the authors believe that unless the test is performed by one experienced in the work, its results are of no value, and are often actually misleading. Clinical evidence is of far greater value than staining methods, even when the latter are performed by an expert. From a practical standpoint all cases should be regarded as of gonococcal origin until proved otherwise. Without desiring to underrate the value of staining methods in diagnosis, the authors nevertheless believe that their usefulness has been considerably overestimated. — Chas. C. Norris and Henry B. Mickelberg, *Jour. A. M. A.*, 76, 164, (1921).



Isohemagglutination.—A report in regard to the grouping of persons on the basis of isohemagglutination has been rendered unanimously by special committees appointed to consider the matter. The American Association of Immunologists, the Society of American Bacteriologists, and the Association of Pathologists and Bacteriologists were represented. Both the Jansky and Moss classifications appear in text books and manuals. In grouping persons for blood transfusion, both classifications are used, the classification of Moss being the more common, especially in France, England and the United States. The use of different classifications in manuals and text books has caused confusion and misunderstanding in teaching. It is also possible for serious accidents to arise in connection with transfusion of blood through confusion of the two classifications. As further confusion and the possibility of accident may be avoided by the universal use of one classification, the Committee recommends unanimously on the basis of priority that the Jansky classification be adopted. Reprints of this report will be sent by the Journal of the A. M. A. on receipt of four cents in postage. —Anon., *Jour. A. M. A.*, 76, 130, (1921).



On the Basis of Facts

The life of our country is built around its Public Utilities. Our social, industrial and Government activities could not exist today without the continued operation of their indispensable services.

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IMPORTANCE OF ORAL HYGIENE DURING CHILDHOOD

HARRY B. BUTLER, D. D. S.,

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Read before Session on Child Hygiene, American Public Health Association, at San Francisco, Cal.,
September 16, 1920.

Civilization is robbing the human race of its teeth and toothless man seems not far distant. The possibility of education to a coarser diet appears to be most remote, so the most hopeful coarse lies in prophylactic measures. The field is the child and the woman Dental Hygienist is the most promising missionary of preventive dentistry.

BEFORE taking up the field investigations in mouth hygiene under the Child Hygiene Section of the United States Public Health Service, the writer, realizing that the work would be principally among children, took advantage of the opportunity to examine several hundreds of children's skulls found in the National Museum. The skulls would average 200 to 300 years old. The field from which they had been collected ranged from the Aleutian Islands, down our Pacific coast, through Honduras and Yucatan, into Peru and across to the South Sea Islands. It was astonishing to discover among this entire collection but a single tooth which showed dental caries.

The investigations carried on during the last year show findings which, compared with the above, become alarming. Out of 7,059 children examined in the State of West Virginia some 16,151 cav-

ities were found exclusive of those containing fillings. Another surprising item was that of underdeveloped jaws and irregular teeth, there being 1,759 of these cases out of 5,935 examined. None of these cases were found in the examination of the skulls referred to.

Among the interesting points of information gained by this study is that the teeth of the Eskimo, due to the hard usage given them, are in a process of evolution, becoming larger and more firmly set in the bony structures supporting them. In some instances this amounted to the formation of actual buttresses about the roots of these teeth.

The conclusion to be drawn bears out the statement of one scientist, that it is but a matter of few generations before civilized man will be edentulous or without teeth. The possibility of persuading the people of today to subsist upon a

coarser diet is most remote and it will be at once seen that our only hope in this direction lies in some prophylactic measure.

A point of great interest is noted in the case of children who show retardation or are under weight. Particularly interesting is a group of 33 retarded children brought for examination. Among these 29 were found to have malocclusion of varying degree and 28 had some pathological gum condition. The examination of 270 underweight children showed 33 percent of them to have from one to four cavities, 46 percent to have from four to eight cavities and a number showed nine, ten and eleven. A marked relation between dental defects and ill health cannot be denied.

Much valuable information may be gained by the study of the reports of the draft boards during the recent war. The greatest number of rejections for any one cause was that for defective vision and the second greatest was for dental defects and it must be here stated that the requirements in this particular were not stringent. Thus again is shown the fact that the conditions existing in the country today are more serious than generally considered and we can but be impressed with the necessity of adopting some definite preventive measures in the immediate future.

Already in England there is under way a program tending toward the improvement of dental conditions for all the people¹ and the most recent country to adopt measures of national magnitude in this line is New Zealand. A letter from the consul general at Auckland states that there has been appointed a national director of mouth hygiene, with a competent corps of assistants who will, at government expense, care for the teeth of all the school children. New York state has a state bureau of mouth hygiene. Among the later states to adopt similar measures is Tennessee, and West Virginia has a similar movement well under way.

The greatest step in this direction is found in America, where we have the dental hygienist, a woman specialist who confines her activities to preventive measures and who exceeds in skill in this particular, the dental man. The dental hygienist solves more than one of our greatest problems for us. There has always been an almost instinctive fear of the dental chair upon the part of children and in overcoming this fear the hygienist serves us well. She has an instinct which enables her to get on well with these little ones and is as far ahead of the average dental man in this particular as is the trained nurse ahead of the male nurse, and for the very same reasons.

A very serious problem confronts us in the matter of the first or six year molar. Out of 7,059 examinations some 1,822 of these teeth were found to be missing and it must be borne in mind that some of these had been erupted but a very short time. These teeth seem to have been lost for one of two reasons; either because of the fear which the child had, or else the parent has failed to recognize this tooth as a permanent tooth. In her work among the school children the hygienist solves this problem in either case. The dental hygienist is the real foundation upon which we must build the structure of preventive dentistry, and some 12 states, realizing this, have enacted legislation which legalizes the practice of dental prophylaxis by these women.

As stated before, our only hope of reducing dental caries lies in some prophylactic measure. The question at once arises, can satisfactory results be obtained by this means? In Bridgeport, Conn., this work has been in progress for a period of five years and the records show a reduction in caries of over 50%.

Dr. Fones, in whose charge this work has been carried on,² states that in his opinion this can be further reduced to at least 70 or 80%.

It has never seemed to the writer, however, that the main objective of mouth

hygiene was the prevention of dental caries. It is a health measure rather than a dental measure. In communities where rational mouth hygiene has been accepted and put into practice there has been reported a reduction in the percentage of cases of illness among school children that seems at first glance to be beyond possibility. In the work at Bridgeport we find that diphtheria has been reduced from 36.6% to 18.7%, measles from 20% to 4.1%, and scarlet fever from 14.1% to 0.5%. Similar results appear wherever careful records have been kept.

Recently the matter of focal infection as related to the mouth has been given much prominence due to the advent of the X-ray. It is not to be denied that abscesses at the apices of roots constitute a constant menace to general health. Before an individual can show symptoms of most of the diseases of which we have definite knowledge, it is necessary that bacteria, or their products, enter the blood stream. This takes place in the areas surrounding the apex of a tooth root which becomes infected from the putrescent pulp of a tooth, but an equally if not more dangerous source of infection is the area surrounding the neck of the tooth, at the border of the gums. It does not require a radiograph to reveal this, but the fascination of radiography has called attention to the apex of the root and in a measure obscured our vision of gingival lesions.

If any of these abscesses* or ulcers existed in any other part of the body or in any other part of the digestive tract, serious results would be anticipated. Then why tolerate them in the body's main gateway? It is at least inconsistent to demand pure water and pure food and to then pollute them at the moment of their being taken into the digestive tract!

Were our sustenance taken into the body through an orifice in the chest wall direct, this orifice would be kept care-

fully covered and not the slightest sepsis would for one moment be tolerated there. The location of the mouth and its varied functions in no way lessens the inconsistency of demanding pure food and allowing the mouth to contain chronic ulcers, pus and decomposed filth. Yet this is revealed every time a group of children is examined and for the greater part it has been allowed to go unnoticed.

The improvement in mentality and in school work that always follows the introduction of a system of mouth hygiene into a school system is so marked that it is difficult to get the average thinking man to believe the very result that he sees. In Bridgeport retardation cost the city 47% of the entire budget. This was reduced to 17%, meaning a reduction of 30% in the housing required, 30% less teachers, a reduction of 30% in the entire school budget.

At Trenton, N. J., there is a state hospital for the insane. The superintendent, Dr. Henry A. Cotton, claims to be discharging 70% of those admitted to his institution through means of cleaning up mouth sepsis and its sequellæ, the infected tonsil and the gastro-intestinal ulcer. This work is not new to Dr. Cotton; he has been doing it for a period of ten years. The bacteria found in the mouth, or their products, selecting the brain as their field of activity, become the direct cause of abnormal mentality. Toxins must be regarded as vegetable poisons, as is alcohol, and it should not be hard to realize that some of these affect the brain as does alcohol. Psychiatrists have long recognized a type of insanity referred to as the toxic cases.

Much adverse criticism has appeared in relation to Dr. Cotton's claims. One point frequently noted is that many cases of *dementia præcox* and of the manic-depressive type clear up and are discharged without having received treatment along the lines mentioned. It would seem that this but strengthened, rather than refuted, Dr. Cotton's claims. These patients, given a period of pro-

*The paper was illustrated by a number of beautiful illustrations in color of actual cases, which it is not practicable to present here.

longed rest and furnished with a well-balanced diet, have their resistance raised and overcome the bacteria by their own vitality. But the fact that the discharges of recovered patients at Trenton continue cannot be denied.³

A definition of insanity which meets all tests⁴ is "The inability of an individual to accommodate himself to his circumstances." Now if the bacteria of the mouth, or their toxins, will cause an adult so to conduct himself as to be legally adjudged insane and committed to an institution for these unfortunates, is it surprising that these same organisms in a child, whose susceptibility is much greater, should cause him so to conduct himself that he fails to harmonize with his teacher and the general plan of school work?

It is not claimed for a moment that all the bacteria found in the mouth are brain selective as far as their toxic effects are concerned, but it is true of some at times. Again they may form the bacterial overload which results in mental unbalance in borderline cases. They may exist as harmless saprophytes in a normal mouth, but given the media of food debris or of blood serum from abnormal gums upon which to grow and they at once assume entirely different characteristics.

W. H. Burnham states,⁵ "Educators are beginning to realize that the knowledge acquired in the schools amounts to little, but that the habits formed and the attitude formed toward life, society and the work, are of vital importance. Most important of all, perhaps, is the problem of obtaining the right attitude between pupil and teacher." We cannot expect this attitude to be formed if the child is suffering from even a slight degree of auto-intoxication from his oral condition.

Psychologists agree⁶ that the future of an individual depends very largely upon his life during his pre-school age, and that the future of a child can be successfully predicted by observing him during his sixth year. During this early period of life there occurs a fixation of mental

trends that largely determines the attitude toward life as a whole. Is it possible that the best attitude can be formed unless the child be in the best of health? The benefits of all hygienic measures at this period of life are more necessary than at any other period.

Little attention is given to the mouths of these little ones on the assumption that, since the deciduous teeth will be replaced by the permanent set, no particular attention to them is necessary, and in this the average dentist is the chief offender. Putrescent pulps, abscesses and endless colonies of pathological organisms are allowed to remain and the responsibility is thrown upon nature. Modern dentistry is more deficient along this line than any other. The normal absorption of roots takes place only when the physiological integrity of the pulp is preserved, and the life of the pulp is essential to normal dentition.⁷ Much of the malocclusion in the adult is traceable to the death of the pulp in a deciduous tooth.

Medicine and dentistry have long been practiced as separate professions. The medical man has left the mouth entirely to the dentist and the dentist has worked along mechanical lines to the exclusion of pathology, and in this both professions are at fault. The greatest benefit of the X-ray to mankind is the closer relationship of the medical and dental men. The problem of caring for the mouths of the little ones is an exceedingly important one and it must be met, faced and solved by the best efforts of both medicine and dentistry.

Just as in preventive medicine lies the greatest good in all medical science, so, too, in dental prophylaxis is to be found the nearest solution of this problem. The establishment of a dental clinic in a school and the employment of competent persons to care for the mouths of the younger children comes nearest to the requirements.

Among the other important measures that may be instituted is the toothbrush

drill. This feature of mouth hygiene must not be underestimated in its value. All will admit the difficulty of getting the average child habitually to brush his or her teeth. But in children we find herd instinct to be very strong. As soon as the first boy appears at school in the springtime with his marbles, all sewing, cooking and other domestic activities in the homes of the other boys must cease until the last year's marbles are located. Children will give various amusing excuses to avoid the brushing of their teeth. However, given the idea that it is a perfectly proper procedure and one practiced by the other children, the acceptance of the mouth toilet as a part of the regular daily routine becomes another matter. In this lies the greatest value of the toothbrush drill and not in the actual brushing at the time. Let us by all means have these drills, but let us see that proper methods of brushing be adopted and let us use reason in carrying them out.

We teach the use of the individual cup; we urge the children to refrain from putting pencils in their mouths; and at length do we speak of that greatest of dangerous habits, coughing and sneezing without protecting our neighbors. Let us hold these drills out of doors. Wet your toothbrush and rub the end of your thumb over the bristles and note the spray that flies from it. In these toothbrush drills let us not so proceed that we create a worse condition than would be created by promiscuous coughing and sneezing.

Were there no other benefit to be derived from the use of the toothbrush than that of the psychological effect produced it would still be well worth our while. Booker T. Washington noted a marked relation between oral hygiene and mentality. He stated that as soon as he could get a colored man to use a toothbrush that he could make a man of him.

Every hygienic measure adopted strengthens the position of others that may be in practice, but in the whole field of hygiene there is no single part that can approach the hygiene of the mouth in importance. In preventive medicine there is no measure which is as far-reaching, and in the matter of expenditure of time or of money in carrying out a mouth hygiene program the returns in each and every case stamp it as much more than a measure of economy.

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The papers of the Symposium on Mental Hygiene presented at the San Francisco meeting of the Association are scheduled for the May issue of the JOURNAL.

A BRIEF STATISTICAL STUDY OF RECENT EXPERIENCE
WITH MEASLES AND WHOOPING COUGH
IN MASSACHUSETTS

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The measures against measles and whooping cough should be conducted principally in the age group of less than three years. This is the dangerous period, eighty-five percent of the mortality being here. The two diseases should awaken equal concern. Careful medical attention and adequate nursing service are suggested among the important needs.

FROM 1913-1919 (inclusive) there were in Massachusetts 2,091 deaths from measles with 152,877 reported cases; while during the same period 37,637 cases of whooping cough caused 2,384 deaths, giving a fatality rate of 1.3% for measles and 6+ % for whooping cough.

These are general rates for all ages and, like most general rates, conceal some very interesting facts which can be brought out by a study of the distribution of cases and deaths by age groups.

TABLE I
Deaths from Measles and Whooping Cough in Massachusetts by Age Groups.
1913-1918*

Age Groups	MEASLES-			WHOOPING COUGH-		
	Number of Deaths	Percent of Total Deaths at Stated Age	Percent of Total Deaths at less than Stated Age	Number of Deaths	Percent of Total Deaths at Stated Age	Percent of Total Deaths at less than Stated Age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Under 1	565	29.6	...	1,152	55.8	...
1	719	37.7	29.6	532	25.8	55.8
2	233	12.2	67.3	177	8.6	81.6
3	119	6.2	79.5	83	4	90.2
4	84	4.4	85.7	52	2.5	94.2
5-9	95	5	90.1	60	2.9	96.7
10-14	17	.9	95.1	2	.1	99.6
15-19	12	.6	96	1	...	99.7
20-29	34	1.8	96.6	2	.1	99.7
30-39	11	.6	98.4	2	.1	99.8
40-49	8	.4	99	...	...	99.9
50-59	4	.2	99.2	...	...	99.9
60-69+	7	.4	99.6	2	.1	99.9
Totals	1,908	100	100	2,065	100	100

*The age distribution tabulations of 1919 deaths have not yet been issued from the Secretary of State's Office.

Table I gives the distribution of the deaths for both diseases for 1913-1918 inclusive.

No age distribution case records are available prior to 1918, but for 1918 and 1919, 35,722 reported cases of measles and 12,420 cases of whooping cough have been tabulated by ages in Table II.

TABLE II
Morbidity of Measles and Whooping Cough in Massachusetts by Age Groups
1918-1919

Age Groups	MEASLES-			WHOOPING COUGH-		
	Number of Cases	Percent of Total Cases at Each Age	Percent of Total Cases at less than Stated Age Number of Cases	Number of Cases	Percent of Total Cases at Each Age	Percent of Total Cases at less than Stated Age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Under 1	1,067	3.	...	1,321	10.6	...
1	2,391	6.7	3	1,329	10.7	10.6
2	3,022	8.5	9.7	1,434	11.5	21.3
3	3,190	9.9	18.2	1,548	12.5	32.8
4	3,466	9.7	27.1	1,347	10.8	45.3
5	3,832	10.7	36.8	1,419	11.4	56.1
6	4,857	13.6	47.5	1,415	11.4	67.5
7	3,611	10.1	61.1	970	7.8	78.9
8	2,406	6.8	71.2	546	4.4	86.7
9	1,508	4.2	78.	347	2.8	91.1
10-14	2,976	8.3	82.2	470	3.8	93.9
15-19	1,115	3.1	90.5	59	.5	97.7
20-24	940	2.6	93.6	54	.4	98.2
25-34	958	2.7	96.2	79	.6	98.6
35-44	280	.8	98.9	32	.3	99.2
45-54	78	.2	99.7	22	.2	99.5
55+	25	.1	99.9	28	.3	99.7
Totals	35,722	100	100	12,420	100	100

Table III gives the fatality rates for both measles and whooping cough during 1918 by ages. For measles, 29,212 cases are involved with 532 deaths, and for

whooping cough 7,764 cases and 729 deaths.

TABLE III

*Fatality Rates for Measles and Whooping Cough in Massachusetts in 1918

**By Age Groups

Age Groups	MEASLES			WHOOPING COUGH		
	Number of Cases	Number of Deaths	Fatality Rates	Number of Cases	Number of Deaths	Fatality Rates
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Under 1..	810	140	17.3	832	332	40
1	1,934	210	10.8	866	212	24.5
2	2,505	69	3.6	935	73	7.8
3	2,571	36	1.4	978	41	4.2
4	2,809	20	.7	873	32	3.7
5-9 ..	12,831	24	.2	2,813	34	1.2
10-14 ..	2,546	5	.2	287	1	.3
15-19 ..	1,029	4	.4	41	2	.5
20-24 ..	2,177	24	1.1	29	1	.3
25-34 ..				56	1	.2
35-44 ..				20	..	.1
45-54 ..				17	..	.1
55-64+				17	..	.1
Totals	29,212	532	1.82	7,764	729	9.25

Table IV gives the ratio of distribution of each disease to the distribution of population in each age group. Such a ratio might be called the index of incidence of a disease in each age group.

Thus in 1918 in Massachusetts we find that 2% of the population (this percentage is assumed to have remained practically constant since 1915) is under 1 year old, but we find 3% of our measles and 10.6% of our whooping cough occurring in the same group. Now if this group has 2% of the population, then 2% would be the incidence expected for both of these diseases. Instead we have 3% and 10.6% respectively, or 1.50 and 5.30

*Ages were given for all deaths but about 10% of the cases in this table were reported without age designation. In order to use these cases and not make the fatality rates disproportionate they were re-distributed in age groups in proper proportions.

**It is noted that the fatality rates for 1918 of 1.82% for measles and 9.25% for whooping cough are higher than the 7 year average of 1913-1918. When the figures were 1.3% and .6%, respectively. This is thought, in a measure at least, to have been due to influenza. Also scarcity of physicians in 1918 in many localities probably resulted in poorer reporting than has ordinarily been the case. Furthermore, the classification of deaths from the primary and secondary causes given on death certificates has been done since 1916 according to the U. S. Census publication "Index of Joint Causes of Death." This is now being done by many of the states and is an improvement in that it makes the statistics of the various states more comparable. It is probable that under this system some deaths are credited to measles and whooping cough that formerly would have been credited to causes that were really secondary.

times as much. This is taken as the index of incidence.

TABLE IV

Index of Incidence of Measles and Whooping Cough in Massachusetts in 1918 and 1919 by Age Groups

	MEASLES		WHOOPING COUGH		
	Percent of Population in Each Age Group in 1915	Percent of Cases in each Age Group	Index of Incidence	Percent of Cases in each Age Group	Index of Incidence
(1)	(2)	(3)	(4)	(5)	(6)
Under 1	2.04	3.	1.47	10.6	5.20
1	1.94	6.7	3.45	10.7	5.52
2	1.98	8.5	4.30	11.5	5.81
3	1.96	8.9	4.55	12.5	6.38
4	1.92	9.7	5.10	10.8	5.65
5	1.86	10.7	5.75	11.4	6.14
6	1.85	13.6	7.35	11.4	6.16
7	1.88	10.1	5.37	7.8	4.15
8	1.81	6.8	3.76	4.4	2.41
9	1.68	4.2	2.50	2.8	1.66
10-14	8.2	8.3	1.01	3.8	.46
15-19	8.5	3.1	.36	.5	.06
20-24	9.8	2.6	.27	.4	.04
25-34	17.5	2.7	.15	.6	.03
35-44	14.7	.8	.04	.3	.02
45-54	10.8	.2	.02	.2	.02
55-64+	11.6	.1	.01	.3	.02
Totals . . . 100	100	100	....	100	....

This index, then, is a true indication of incidence in each age group since it takes into consideration both the population in a group and the number of cases. The percentage distribution of cases does not consider the population of the different age groups and does not, therefore, give comparable figures for the different ages; but, as a matter of fact, the percentage distribution figures do give a practical comparison of incidence for the different ages under 10, since (see Table IV, column 2) the populations in these years happen to be nearly the same.

The index figure, however, is the best one to use and it is unfortunate that we have fallen into the habit of making comparisons between the distribution of cases and deaths in different ages without taking into consideration the populations in those ages.

The figure involves the question of immunity and susceptibility to certain diseases at certain ages and is in some degree an expression of their value; but

these are only two of many complex factors involved in the figure. We must consider (to mention only a few other things) place and degree of exposure. Place involves rural and urban conditions, temperature, climate, living conditions, wages and civilization, character of population, race, occupation, etc. Degree of exposure involves the natural broadening of associations as the child grows older, the increasing facilities for travel, etc.

Now, if two index figures that are to be compared be considered as made up each of a number of factors, some of which are constants and some of which are variants, then the index figures themselves are expressions of the variants. In comparing the indexes of incidence of a given disease at different ages, if we were to consider immunity and susceptibility as the variants, then these indexes would themselves express the degree of immunity and susceptibility to that disease at different ages, provided that, and in proportion as, the other factors are reduced to constants. This is not possible to do except perhaps in a very gross way and the conclusions, therefore, would not be accurate.

Thus if we could correctly assume the average Massachusetts conditions of climate, population, living, etc., in 1918 and 1919 to be constant for the two diseases and the proportionate amounts of exposure to the diseases at given ages also to be constant, then the variants which would be mainly immunity and susceptibility might be approximately evaluated by the indexes themselves. But at once it is evident that the assumption is incorrect; since, for instance (Table IV, Columns 4 and 6), whooping cough would occur in higher proportions in the early ages than would measles, giving a higher proportionate exposure in those ages and, furthermore, the length of effective exposure is likely very much longer. Many other factors could not be established as constants.

It is, therefore, practically impossible to fix values for the individual factors

that make up this figure, however interesting may be speculation along these lines.

Tables V and VI give the total number of cases and indexes of incidence of whooping cough and measles by ages and months. The indexes of incidence are, of course, calculated from the percentage distribution of population by ages (Table IV, Column 2) and the percentage distribution of the cases by ages. The intermediate calculations are omitted. This table shows that the incidence is seemingly higher in the early ages for both diseases during the hot months instead of the winter months. Speculation as to the cause of this would be interesting.

CONCLUSIONS

(1) Approximately 33% of the whooping cough and 18% of the measles in Massachusetts are in children *under 3*.

(2) For a period of years (1913 to 1918) 90% of the deaths from whooping cough and 79½% of those from measles have been *under 3 years old*.

(3) The apparent fatality rates for the group, *under 3* in 1918 were 23½% for whooping cough and 8% for measles.

(4) For each thousand reported cases of measles in 1918 in Massachusetts there were 18 deaths and 14 of these were *under 3*.

(5) In the same year each thousand cases of whooping cough represented 92 deaths and 77 of these were *under 3*.

(6) Even though there has been, on an average, 4 or 5 times as much measles, the whooping cough fatality leads for the six years (1913-1918) with 2,065 deaths compared with 1,908 for measles. This is a total of 3,973 deaths from the two diseases and 3,378 were *under 3*.

(7) Measles is more prevalent but less fatal; whooping cough less prevalent but more fatal. In the end they cause almost equal numbers of deaths and should cause us equal concern.

(8) Measuring our success by a reduction in deaths from these diseases it is at once apparent that our results de-

TABLE V.

TOTAL CASES* AND INDEX OF INCIDENCE** OF MEASLES AND WHOOPING COUGH IN MASSACHUSETTS BY AGES AND MONTHS IN 1919.

(1)	(2)		(3)		(4)		(5)		(6)		(7)		(8)		(9)		(10)		(11)		(12)		(13)	
	January		February		March		April		May		June		July		August		September		October		November		December	
Ages	C	I	C	I	C	I	C	I	C	I	C	I	C	I	C	I	C	I	C	I	C	I	C	I
-1	25	3.1	37	5.2	41	4.3	34	4.4	42	4.3	44	4.6	70	7.3	44	5.1	33	4.7	36	4.8	60	4.4	83	4.4
1	35	4.5	30	4.4	32	3.6	37	4.6	39	4.3	34	3.8	49	5.4	53	6.4	53	7.8	38	5.2	47	3.6	81	4.5
2	43	5.5	34	4.9	52	5.7	37	4.9	48	5.2	36	3.9	41	4.4	55	6.5	50	5.8	38	5.2	65	4.9	77	4.3
3	48	6.1	36	5.3	45	5.0	47	6.4	44	4.7	39	4.3	47	5.1	60	7.1	43	6.3	35	7.1	73	5.5	107	5.9
4	43	5.6	28	4.1	32	3.7	40	5.4	48	5.2	46	5.0	38	4.1	42	5.0	34	5.0	35	4.6	51	3.9	100	5.5
5	54	7.3	47	7.3	37	4.3	36	5.1	49	5.6	43	4.9	42	4.8	39	4.9	32	4.9	39	5.7	78	6.3	108	5.5
6	48	6.5	43	6.7	37	7.8	37	5.3	48	5.5	53	6.1	35	4.2	28	3.8	28	4.3	38	7.1	70	6.1	130	7.6
7	26	3.5	31	4.6	54	6.1	35	4.9	52	5.9	37	4.2	28	3.1	19	3.4	21	3.2	24	3.4	65	6.1	62	3.6
8	20	2.8	14	2.3	25	3.0	16	2.3	15	1.8	19	2.3	27	3.1	6	1.2	7	1.3	14	2.1	31	2.5	51	3.0
9	8	1.2	11	1.3	20	2.6	15	2.3	14	1.3	18	2.3	27	1.1	6	1.9	7	1.2	8	1.3	18	1.6	9	1.6
10-14	12		16		17		11		25		14		11		10		9		10		37		32	
15-19	1		2		2		1		2		1		3		1		1		1		4		2	
20-24			2		1		1		..		1		15		3		3		..		2		1	
25-34	..		..		..		..		..		..		3		..		..		..		2		4	
35-44	..		..		..		..		..		..		..		..		..		..		..		5	
45-54	..		..		..		..		..		..		..		..		..		..		..		2	
55-64	..		..		..		..		..		..		..		..		..		..		..		1	
65+	..		..		..		..		..		..		..		..		..		..		..		3	
Unknown	31		14		34		31		43		77		50		50		35		22		58		68	

*In ordinary type.

**In heavy black type.

TABLE VI.

TOTAL CASES* AND INDEX OF INCIDENCE** OF MEASLES AND WHOOPING COUGH IN MASSACHUSETTS BY AGES AND MONTHS IN 1919.

(1)	(2)		(3)		(4)		(5)		(6)		(7)		(8)		(9)		(10)		(11)		(12)		(13)	
	January		February		March		April		May		June		July		August		September		October		November		December	
Ages	C	I	C	I	C	I	C	I	C	I	C	I	C	I	C	I	C	I	C	I	C	I	C	I
-1	21	2.0	14	1.5	30	1.9	48	2.3	37	1.4	31	1.7	22	2.3	7	2.6	11	3.0	14	1.2	35	1.6	61	1.1
1	41	4.1	24	2.7	43	2.8	63	3.1	71	2.8	65	3.8	27	3.0	20	7.7	21	6.0	44	4.0	87	3.6	141	2.8
2	39	3.9	32	3.5	59	3.8	86	4.2	83	3.2	60	3.4	60	6.5	17	6.5	15	4.2	33	3.0	93	4.1	174	3.4
3	46	4.6	33	3.6	67	4.4	89	4.3	118	4.6	74	4.2	54	5.9	25	9.7	19	5.4	42	3.7	87	4.5	193	3.8
4	47	4.8	46	5.3	70	4.7	85	4.1	114	4.5	60	3.5	54	6.0	14	5.6	11	3.3	55	5.1	101	4.9	256	5.1
5	38	4.0	52	6.2	82	5.7	118	6.1	137	5.7	86	5.2	59	6.7	9	3.7	25	7.5	56	5.4	148	7.5	191	4.0
6	48	5.1	39	4.5	111	7.7	133	6.9	180	7.4	122	7.4	55	6.3	10	4.1	28	8.5	98	9.5	155	7.8	377	7.8
7	46	4.8	57	6.7	95	6.5	104	5.3	143	5.8	78	4.6	31	3.5	5	2.0	17	5.0	63	6.0	100	5.7	283	5.8
8	33	3.6	29	3.5	42	3.0	83	4.3	93	3.9	52	3.1	27	3.2	1	1.8	10	3.1	18	1.9	69	3.5	200	4.2
9	23	2.7	23	3.0	31	2.4	41	2.3	47	2.1	21	1.4	16	2.0	4	1.3	3	1.0	50	4.9	88	3.2	107	2.4
10-14	50		43		47		65		106		60		27		4		9		25		55		171	
15-19	17		17		17		21		26		21		7		4		9		7		35		41	
20-24	11		13		21		13		15		15		8		1		2		10		6		16	
25-34	8		4		20		15		14		6		2		1		1		3		6		25	
35-44	1		7		7		3		2		3		..		..		..		..		5		11	
45-54	..		..		..		..		..		..		..		..		..		..		..		1	
55-64	..		..		..		..		..		..		..		..		..		..		..		..
65+	..		..		..		..		..		..		..		..		..		..		..		..
Unknown	37		17		32		73		122		136		20		9		3		40		70		255	

*In ordinary type.

**In heavy black type.

pend very largely on how successfully we prevent measles and whooping cough in children under 3, among whom about 85% of the deaths occur (90% whooping cough; 79½% measles).

(9) Propaganda and methods of control should be more specifically directed at the age group under 3.

(10) It cannot be emphasized too strongly that in these dangerous years, when so many children die of measles and whooping cough or their complications, the most careful medical attention and nursing are needed to prevent dangerous complications.



PROGRAM OF THE BUREAU OF SOCIAL HYGIENE OF THE CALIFORNIA STATE BOARD OF HEALTH

WALTER M. DICKIE, M. D.,

*Executive Health Officer, State Board of Health,
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Read before Session on Personal Hygiene, American Public Health Association, at San Francisco, Cal.,
September 15, 1920.

THE Bureau of Social Hygiene of the State Board of Health was established August 13, 1917, as a war emergency, to coöperate with the Army and Navy in reducing the spread of venereal disease in the men stationed in California and to prevent these diseases in the civil population of the state. Military efficiency demanded healthy men and the records of our draft army later showed appalling conditions in the individual communities throughout the country and immediately revealed the necessity of enlarging our program and extending the work as rapidly as possible throughout the whole state.

The original functions of the Bureau were outlined as follows:

1. To secure the reporting by physicians of cases of syphilis and gonococcus infection, together with the probable sources of infection.

2. To discover foci of infection and to isolate infectious persons, whenever necessary, to prevent the spread of venereal disease.

3. To secure the coöperation of cities and counties in caring for men and women isolated on account of venereal disease in public hospitals until no longer infectious.

4. As far as possible to secure the medical examination for venereal disease in male and female prisoners and other persons.

5. To focus on this subject the social forces necessary to give the foregoing individuals an opportunity to enter into productive occupations under conditions fair to themselves and to the communities.

6. To provide the necessary facilities for diagnosis and treatment.

7. To issue printed pamphlets, cards, placards and care for exhibition of films and presentation of lectures to appropriate groups.

8. To coöperate with the Army and Navy, the United States Public Health Service and all state and local agencies directly or indirectly interested in conditions or causes which lend to the spread of venereal disease.

In order to carry out this extensive program it became necessary to divide the Bureau into three divisions, namely: Medical, Social Service and Educational.

Medical.—The work of the Bureau was handicapped in the beginning because there were almost no facilities with which to work, so it was necessary immediately to provide increased hospital and

dispensary facilities. Many county and other hospitals which had not, up to this time, admitted venereal cases, were prevailed upon to admit them the same as those suffering from other diseases.

Special hospitals were established in the four largest centers of population in the state, for the purpose of caring for those who had passed through the courts and who had been arrested on charges involving moral turpitude and who had been found infected with venereal disease. In some places both men and women were detained and treated until they were found non-infectious. Since 1917, 4,448 persons have been treated in these hospitals.

The next step was the establishment of clinics throughout the state, which would provide free medical treatment for the large group of persons who were infected and who would otherwise be deprived of adequate treatment. Ten free clinics have been established in the various communities, while five others have been enlarged through state and federal aid, and special clinics have been established for children. In connection with each clinic there has been provided a social worker, whose duty it is to see that patients do not lapse in their treatments; to discover foci of infection and through social service work bring in those suspected of being infected. The social service workers alone have brought in 1,926 cases and returned for treatment 2,350 cases during the last fiscal year. The Bureau has also furnished to date, free, to the various hospitals and clinics, 22,285 ampoules of salvarsan for treatment of indigent cases. The number of treatments given during the year just ended was 77,180.

Rules and regulations have been passed by the State Board of Health, under which these patients, as well as private patients, are required to take the necessary amount of treatment.

Physicians and health officers are required to report each case by number to the State Board of Health and to fur-

nish the name and address of a patient if he or she discontinues treatment. This information is furnished the Health Officer, who is held responsible for the control of the individual so reported.

Social Service.—Two years ago a Social Service Department under the direction of Mrs. Elizabeth McManus was established, which now consists of a Social Service Director, four field workers, and a social service worker connected with each clinic. One of the contributions made by the Social Service Department has been the education of the public through the various organizations of the community, to the fact that a large percentage of the cases have been innocently contracted and, therefore, the fact that one is infected with venereal disease does not necessarily imply immorality.

The social workers attached to the various clinics have held to this idea and have considered the infected persons coming under their care as patients, rather than as offenders against the law. This has had the effect of building up the number of voluntary treatments, and where originally it was difficult to find anyone who visited a clinic without persuasion, now the number voluntarily seeking treatment steadily grows. This holds true not only of the clinics, but private physicians, as well, testify to the increased number of treatments where social workers are active in the community. The social worker coöperates with all social agencies, such as health departments, courts, probation departments, police departments, hospitals and other agencies which may contribute to the number of cases, and acts as a clearing house in the community.

In this connection an interesting piece of work which is being developed in the state is in connection with the psychopathic cases. Through the coöperation of the psychopathic court and the various insane asylums, the relatives of persons suffering from mental diseases due to syphilis committed to these institutions are reported to the Bureau of So-

cial Hygiene, and visited by a social worker, who endeavors to see to it that all infected members of the family are placed under treatment. By this means a large number of people who otherwise probably would be unable to receive any treatment are taken care of. It is also our desire, as quickly as possible, to extend this follow-up work to the families of all infected cases admitted to other state institutions.

The social worker seeks to discover persons in the community who need medical attention, either making arrangements for their treatment at the clinic, if unable to pay the physician's fee, or suggesting treatment by private physicians, if the patient is able to pay. She reports once a month to the Bureau of Social Hygiene on all cases brought in by her, and also must report all cases discontinuing treatment without the permission of the physician.

The duties, primarily, of a social worker connected with a venereal disease clinic are:

First: To discover cases in the community requiring treatment, and to place such cases under treatment.

Second: To see that cases continue treatment until dismissed by the physician.

Third: To make every effort to improve conditions, through coöperation with all available agencies; to remove the cause of infection through education; assisting in finding employment for young women in need of it; establishing better detention facilities through hospital care, and all other such work as will tend toward the decrease of problems leading to infection.

Education.—The Social Service Department has assisted in educating the community to the need of the care and protection of its juveniles and the rehabilitation of its unfortunates.

The department has endeavored to teach that the burden of responsibility is upon the community rather than upon the individual and that prevention is of

far greater value than cure. It has advocated and assisted in the establishment of industrial schools, proper detention homes for women and the State Industrial Farm, with the idea of re-educating the unfortunates, while special stress has been put upon the responsibility of the parents. It has succeeded in interesting civic groups and in calling the attention of school authorities to the fact that the solution of the problems is one in which they are directly interested.

During the biennial period ending June 30, 1920, 218 lectures were given before 42,000 persons. These lectures were delivered by the members of the Bureau and specially qualified volunteer lecturers in the various communities. They are in many instances arranged for by the local worker and in one instance our social worker has talked before practically all the organizations of the community. Through our local representatives in the various communities, we are able to keep up a very effective continuous campaign of education. During the last two years 200,000 pieces of literature have been distributed by the Bureau, while no less than 487,000 persons have seen the Bureau's charts and lantern slides, and more than 50,000 have witnessed our picture films on social hygiene.

Special courses of lectures on venereal disease and social hygiene have been given to the student nurses in the various training schools.

Such, briefly, is the summary of the educational work of the Bureau. The daily mail, bringing in its many requests for information and literature, indicates that the word "passed" from old patients to the newly-infected persons is manifold. The indirect results of the educational work we have no way to determine but the continued interest of the general public in the work indicates that information on venereal diseases and their control is earnestly desired, and we know that we are providing a service, not only to the infected individuals, but important for the welfare of future generations.

SYMPOSIUM ON HEALTH SUPERVISION IN COLLEGES

I. EDUCATION IN HEALTH AT CORNELL UNIVERSITY, 1919-1920.

HAVEN EMERSON, M. D., LAWRENCE B. CHENOWETH, M. D., FRANK C. BALDERRY, M. D., and CLAUDE E. CASE, M. D.

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Presented at Session on Personal Hygiene, American Public Health Association, at San Francisco, Cal., Sept. 15, 1920.

IN October, 1919, there appeared in this JOURNAL (Vol. IX, No. 10, pp. 749-760) an article by Associate Professor Eugene C. Howe, Ph.D., of Wellesley College on "The Health of the College," in which he analyzes and reports upon the status of hygiene and sanitation as maintained and taught at 74 American colleges and universities. The authorities, overseers, trustees, faculties and presidents of these and other institutions of higher education, including medical colleges, cannot fail to appreciate the extent of the shortcomings exhibited. Instead of demonstrating the best possibilities of application of practice and education in the theory of personal, group and inter-group hygiene and sanitation, the great majority of colleges fail to make the most elementary provision for protection of the student and his teachers by control of environment, food, air, water, housing, study and recreation facilities, and miss their obligation and opportunity to establish in the student's life the habit of annual medical examination and the prompt recourse to a physician upon the appearance or suspicion of abnormal function or structure, the principles upon which he must rule his life and guide that of his associates and dependents in order to acquire and maintain rugged health.

The intent of Cornell University to provide for its student body a type of education and health protection which would meet the best conception of hygienists, educators and sanitarians crystallized in September, 1919. The following record is offered as a continuation of the response to Professor Howe's article.

PLAN AND PERSONNEL

Under agreement with the Inter-Departmental Social Hygiene Board at Washington, D. C., and in compliance with certain professional medical and didactic requirements specified in the terms of the agreement, and with financial aid granted by the Federal Government, Cornell University put into effect in September, 1919, a compulsory system of education in Hygiene and Preventive Medicine, together with medical examination in and supervision of the health of the students.

A Department of Hygiene and Preventive Medicine was established in the University Faculty. The personnel provided for consisted of:

- 1 Professor.
- 1 Assistant Professor.
- 1 Chief Medical Adviser.
- 7 Assistant Medical Advisers.
(5 for men, 2 for women)
- 1 Chief Clerk.
- 2 Assistant Clerks.
(1 for men's department)
(1 for women's department)

Special lecturers were obtained from among the various faculties of the University and from outside sources, i. e., other universities and the field of public health.

Student help was obtained to assist in checking attendance at classes and in filing records.

Lectures were given by the Assistant Professor and by one of the Assistant Medical Advisers for men in some of the elective courses in Hygiene in the Department of Physical Education. Some of the lectures in the required course in

Hygiene and Preventive Medicine for first and second year students were given by the Assistant Professor and by the senior medical adviser for women.

The work of the department has consisted of the following:

1. Medical Examinations.
2. Medical Consultations.
3. Instruction in Hygiene and Preventive Medicine.
4. Medical Conferences.
5. Sanitary Supervision and Control of Communicable Diseases.

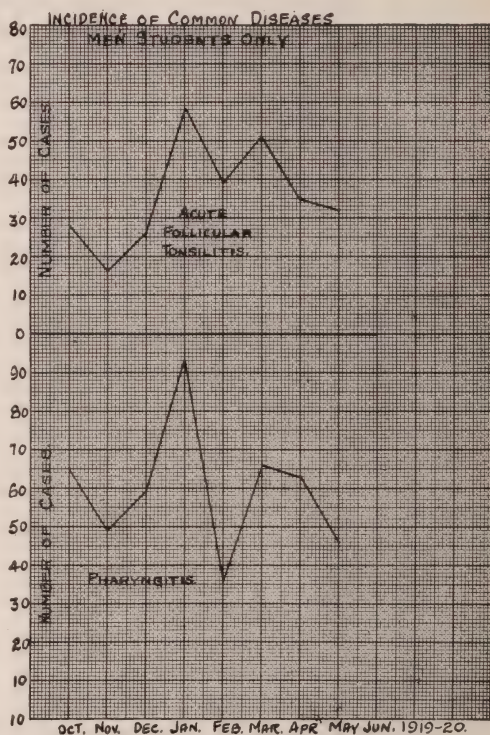
MEDICAL EXAMINATION ON ADMISSION

Every student is required to have a medical examination each year. Students are excluded permanently, or separated temporarily from the university only for diseases in communicable stages which might be conveyed to fellow students or teachers. The existence of physical defects is not a cause of exclusion. Students have been excluded for tuberculosis and for venereal diseases. The examination is thorough and involves the family and personal history, and the inspection, palpation, percussion, auscultation, and where necessary measurements of the body. The clothing is removed for the examination, which is done with entire respect for the privacy of the student, the students being examined one at a time in the private office of one of the medical examiners. The objects attained are (a) the detection of the various defects due to disease or faulty development which may be or should be removed or corrected by medical or surgical means or through suitable exercise or management of regimen at college; (b) The recording of such students as may safely be permitted to engage in major competitive sports, those who must be followed up if they enter for competitive athletics to ensure their avoiding strain or permanent injury, and those who must take regular exercise under direction in order to acquire sound physical health.

For the 5,421 students (1,169 of them women) there are eight medical exam-

iners employed on full time, and on duty seven hours a day throughout the college year. Two examiners are on duty on Sundays. Two of the examiners are women physicians caring for women students. The examinations are completed in the first semester (September

CHART 1



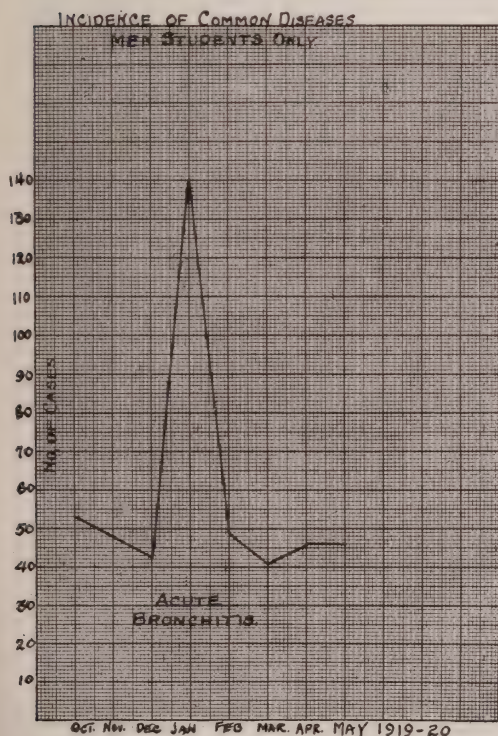
to January inclusive), and are shared in equally by all examiners with unimportant variations due to special assignments for consultation service during the fall football season and for medical consultation work for the daily sick attendance.

First year students receive the earliest attention. The other classes are called in by appointment in turn. The number of examinations made for this purpose by each physician varied from 400 to 900 during the 16 weeks of the first semester. The time for each examination varied from 15 to 30 minutes, the shorter time being common among the upper class

students whose previous medical records made saving of much time possible. Form A is used for the examination record of the student for four years.

Orthopedic examination is made in all cases. Examination of urine, blood and blood pressure are made only when considered necessary to explain or support items brought out in the history and physical examination. Test with Snellen's chart is used as a routine and more detailed examination of the vision, is undertaken by one member of the staff, especially trained in this field, only when there is some difficult, unusual or uncorrected visual defect.

CHART 2



Restriction of academic program and compulsory physical training are required when the physical condition of the student requires it. Dental examination is made by direct inspection, but without the use of mirrors or instrumental search, and not by a dentist.

The information obtained in the family history of students was used to bring home to them the relative importance of the causes of death and of the preventable causes among those which had occurred among their own family, *i. e.*, deaths of father, mother, brother, sister, aunt, uncle or grandparent. It is of much educational value to point out to a body of students that 319 of the students did not know the causes of deaths of their immediate relatives, that in 13.6% of the instances where the cause of death was known, the death was due to tuberculosis; 30.2% to pneumonia and the acute communicable diseases; 11.4% to valvular heart disease and diseases of the arteries; 9.3% to cancer and that in 9% there was trachoma, 2.4% diabetes, etc. The teaching of hygiene to healthy young men and women requires the use of all devices and opportunities to make the matter one of intimate personal importance. The wish for self preservation, as well as the impulse of selfish action for the public good must be built upon to create interest in the philosophy and practice of health.

The personal history of the students in 5,421 of the required medical examinations, and at 16,582 consultations, when the students came for advice as to their health, elicited invaluable material for educational, corrective and supervisory purposes. To avoid extensive presentation of statistical data, which has been tabulated by disease, according to the international nomenclature, by sex, by class and by time of occurrence if the disease developed at the University, only the important summaries will be given here. The 5,421 students gave histories of having had a total of 8,496 cases of the acute communicable diseases of childhood, measles, mumps, chicken pox, whooping cough, scarlet fever and diphtheria, in that order of frequency; 259 cases of typhoid, three of para-typhoid, two of amebic dysentery, 26 cases of smallpox, 600 of influenza, 525 of pneumonia, 722 of acute follicular ton-

Medical Examination

Name

(Print) Last

FirstMiddle

College

Class

Home Address

Nativity

Family History

Personal History

Age

Vaccination

Date

Habits—per day—Pipes

Cigars

Cigarettes

DATE	1st Year		2nd Year		3rd Year		4th Year		
General Condition									
Posture									
Skin									
Superficial glands									
Thyroid									
Weight; Height	Wt.	Ht.	Wt.	Ht.	Wt.	Ht.	Wt.	Ht.	
Vision	R.	L.	R.	L.	R.	L.	R.	L.	
Corrected glasses									
Eyes									
Ears									
Hearing	R.	L.	R.	L.	R.	L.	R.	L.	
Teeth: Care									
Pathology									
Nose									
Throat									
Chest									
Lungs									
Heart									
Abdomen									
Hernia	R.		R.		R.		R.		
	L.		L.		L.		L.		
Spine									
Feet	R.		R.		R.		R.		
	L.		L.		L.		L.		
Reflexes	R.	Eye	K.J.	Eye	K.J.	Eye	K.J.	Eye	K.J.
	L.	Eye	K.J.	Eye	K.J.	Eye	K.J.	Eye	K.J.

Remarks:

sillitis. Many tropical diseases and accidents, operations and sequellæ of childhood defects of nutrition and of the nervous and mental functions were recorded. One hundred and four had not been vaccinated against smallpox. In 166 cases visits were made to the student's room to establish diagnosis and authorize admission to the infirmary if necessary.

In 864 cases special examinations were made for the purpose of determining fitness for major competitive athletics. Excuses from attendance at college exercises were issued for medical reasons in 6,854 instances, the average duration of excuses being two days. Of the total excuses 970 were issued to women because of menstrual disorders. Twenty-six men were excused permanently from military drill and from gymnasium. Eighty-six men were excused permanently from military drill and were transferred to required gymnasium work. Military drill and gymnasium work were postponed in 51 cases because of recent operation, fractures or illnesses. The record of the consultations and of excuses and the reason for issuing them is kept on Form B and Form C which are continuous for all the years of university attendance. From this record are also obtained the number of days lost on account of illness by each student and by the student body as a whole.

There is no medical examination offered to the teaching staff or to members of their families. There is but slight use made of the facilities available for developmental physical training offered to the teaching staff by the Department of Physical Education.

Some form of physical exercise is required of all students of the first and second years, included under one of the following headings:

1. Compulsory military drill (3 hours per week).
2. Athletics (of which record and attendance is kept).
3. Gymnasium or outdoor exercise (recorded and selected voluntarily).
4. Exercise of various kinds required for correction of defects, in the gymnasium under direction.

Engagement in major sports is permitted only on special examination and after receipt of a medical certificate.

MEDICAL CONSULTATIONS

The medical examiners' offices are open daily from nine to six, except Sundays, when the hours are nine to twelve. The students are encouraged to come to report even the slightest of symptoms or matter of concern to them in regard to their health. There have been 16,582 consultations and a summary of the conditions for which advice has been sought are to be seen in Table I. This is as

FORM B.

DEPARTMENT OF HYGIENE AND PREVENTIVE MEDICINE

CORNELL UNIVERSITY Serial No.....

Consultations

Medical Adviser: Initial each entry

[Print] NAME	COLLEGE	CLASS
DATE AND ADVISER	COMPLAINT—FINDINGS—DISPOSITION	DIAGNOSIS

TABLE I.
1919-1920

	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total
General Diseases	77	88	30	137	122	59	36	129	10	638
Nervous System and Organs of Special Sense.....	85	68	67	122	62	116	67	85	17	689
Circulatory System	45	23	29	27	15	11	16	14	5	185
Respiratory System	222	165	194	425	152	218	178	154	23	1,731
Digistive System	221	195	227	346	157	258	207	196	43	1,848
Genito-Urinary system Non- Venereal	19	19	12	12	14	13	17	6	5	117
Diseases of Skin.....	155	104	84	108	74	94	86	124	41	860
Bones and Organs, Locomo- tion	37	43	38	54	38	35	36	36	7	324
Affections Produced by Ex- ternal Causes	179	192	165	172	109	184	154	192	58	1,405
Ill-Defined Diseases.....	90	246	16	27	8	49	33	47	16	582
Total	8,329									

nearly as possible a true morbidity report of the entire student population, and when arranged by months and taken in relation to vacation, etc., is of considerable interest. The information was used frequently during the course of class instruction.

Where advice or the simplest of local treatment or medication is all that is needed, the student is not referred to a private physician. Fever, or any condition requiring bed care, results in admission at once to the college infirmary. (No students are permitted to stay in their rooms more than 24 hours on account of sickness.) If bed care is not needed and treatment needing more than temporary observation is required, the student is advised to go to one of a list of reputable practitioners of the town. The student selects the physician.

Care in the infirmary, which is fully equipped and in charge of a trained graduate nurse superintendent, is entirely by private physicians selected by the students. The students' medical fee to the University goes to the support of the infirmary. One dollar a day is charged for infirmary care. The standards of the American College of Surgeons are not maintained at the infirmary, and there is no record left by the private physician of the condition of the students while in hospital, except the bare statement of diagnosis. Excuses for non-attendance at classes are issued by the medical examiner's office. Students report to the medical examiner's office when leaving the infirmary or the care of a private physician.

There were 11 deaths among the student body during the academic year, of

FORM C.

Record of Excuses

NAME		COLLEGE			CLASS
DATE OF ONSET	RECOVERY	DIAGNOSIS	House or Infirmary	Days Lost	PHYSICIAN

which eight were due to pneumonia and empyema, one to acute streptococcus septicemia within 24 hours of appearance of a furuncle on the cheek, one to abscess of lung following acute follicular tonsillitis, one to suicide.

One history of syphilis and one of gonorrhea were obtained in original examination of students. Including these there were discovered a total of ten cases of venereal disease of which eight were

in the autumn and after the Christmas and Easter recesses, is apparent from a reading of Charts 1, 2, 3, 4.

CHART 4

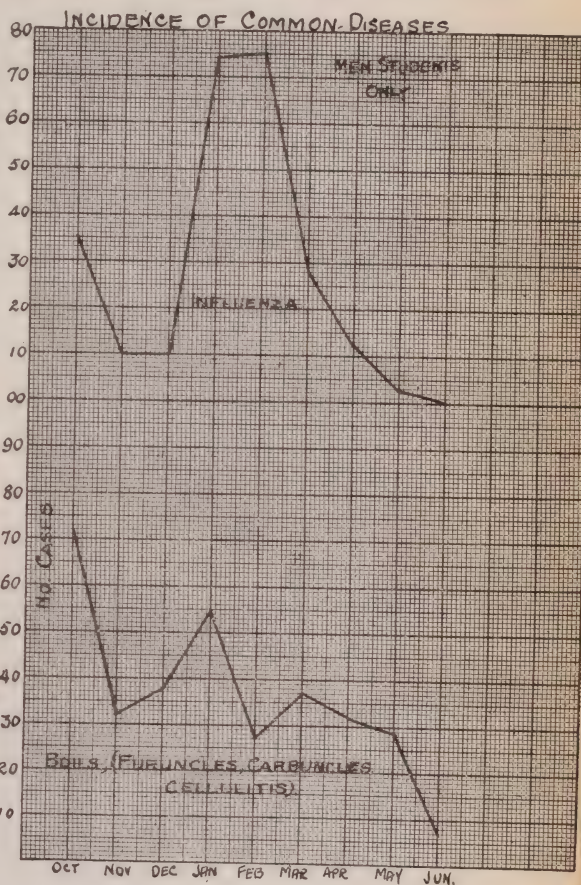
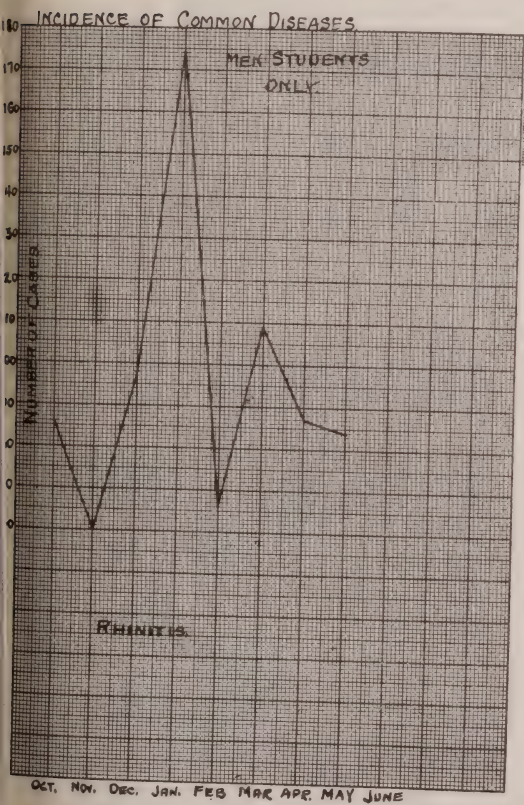


CHART 3



gonorrhea and two were syphilis. It is believed that this is an accurate and complete record. Every effort was made through the medical examiners, through private physicians of the town and through the director of student athletics to discover other cases.

The characteristic seasonal incidence of the acute respiratory diseases, and the recrudescence of them on reassembling

The gradual but marked reduction in the diseases of the skin due to lack of bodily cleanliness and insufficient frequency of change of underclothing, as shown in Chart 4, bears testimony to the value of persistent education in personal hygiene. Charts 5 and 6 show the usual relative incidence of the acute respiratory infections and all illnesses as they prevailed month by month among the men and the women students. Analysis of the time lost on account of disease, the relative incidence of the various groups of preventable sickness to the total experience for men and women, shows that:

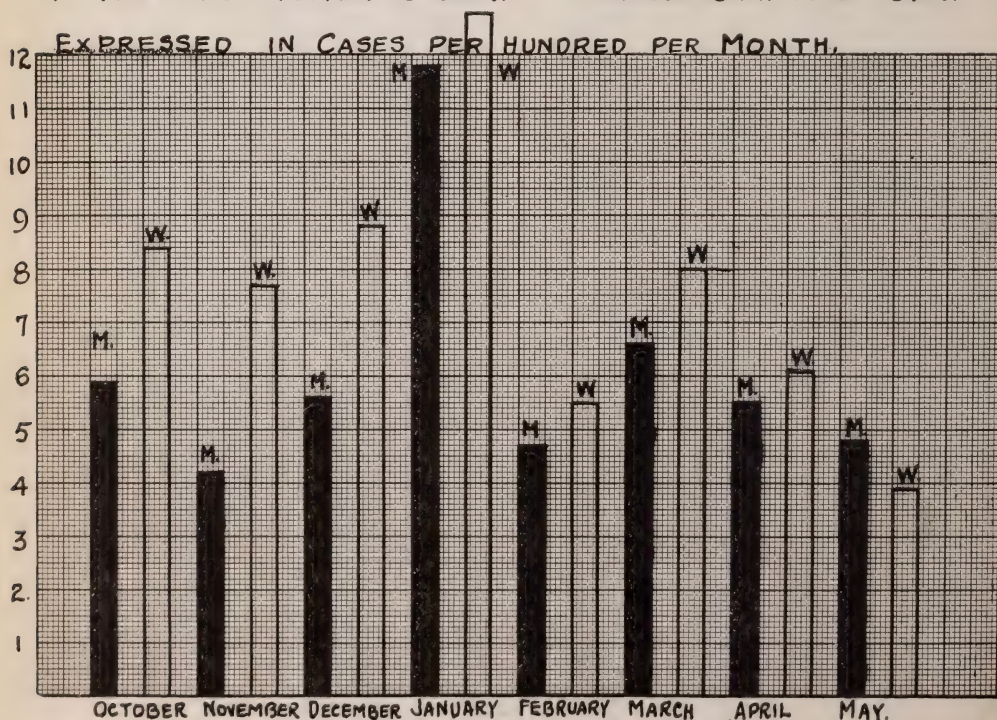
Of the total number of days of student time possible for the entire student body, 1.6% of days was lost during the college year on account of sickness. The loss by the women students being 2.4% of their possible total days, the loss of the men being 1.5% of their possible days. Of the total cases of sickness recorded, numbering 8329, 52% were due to sicknesses which fall properly within the designation of preventable diseases; that is, acute respiratory infections, acute infectious diseases, infections and communicable diseases of the skin, and disturbances due to errors of diet or in the use of foods. Of the total cases of sickness, 21% were due to respiratory affections, 7.7% due to acute infections, 10% due to skin affections, 22% due to digestive disturbances, and 16.6% due to external causes.

INSTRUCTION IN HYGIENE AND PREVENTIVE MEDICINE

Hygiene and preventive medicine, a one hour a week lecture course, is required through the first two years of college for students of all colleges. Exemption is permitted by action of the University Faculty when proof is presented of equivalent education prior to entering the University. Mid-term written and final examination and written notes of the course, together with reading and reporting on the subject matter of the text-book of the course (Lee's Health and Disease), are required of all those taking the course. The attendance has been about 2,400, divided into six sections of about equal size. No college credit is given for this course. Defects are obvious in the impracticability of getting direct reaction in question and

CHART 5

COMPARISON OF SO CALLED ACUTE RESPIRATORY INFECTIONS
(RHINITIS, PHARYNGITIS, TONSILITIS, TRACHEITIS, BRONCHITIS & PNEUMONIA).
IN MEN AND WOMEN STUDENTS - CORNELL UNIV. 1919-1920.



reply contact with students, in sections of this size. This is offset to some extent by the conferences with individual students described later. The course has covered the following subjects and has been intentionally divided among a considerable number of lecturers with two objects in view, first to provide the superior quality which comes from specialist handling of certain phases of the work, second, to impress the student body with the breadth of the problem of disease prevention and health development and the extent of the relationship of the subject to the various professional and technical schools they are attending.

LECTURES

1. Objects and Outline of Course.

Prof. Emerson. Health a product of heredity, environment and personal habits.

2. Prof. Emerson. Report on incidence of acute respiratory tract infections in University and lesson to be learned and means of prevention. Hereditary factors in health. Mendell's Law, feeble mindedness.

3. **Anatomy.** Prof. Sutherland Simpson. Skeleton. Basis for attachments. General description of bony framework. Protection and support for viscera.

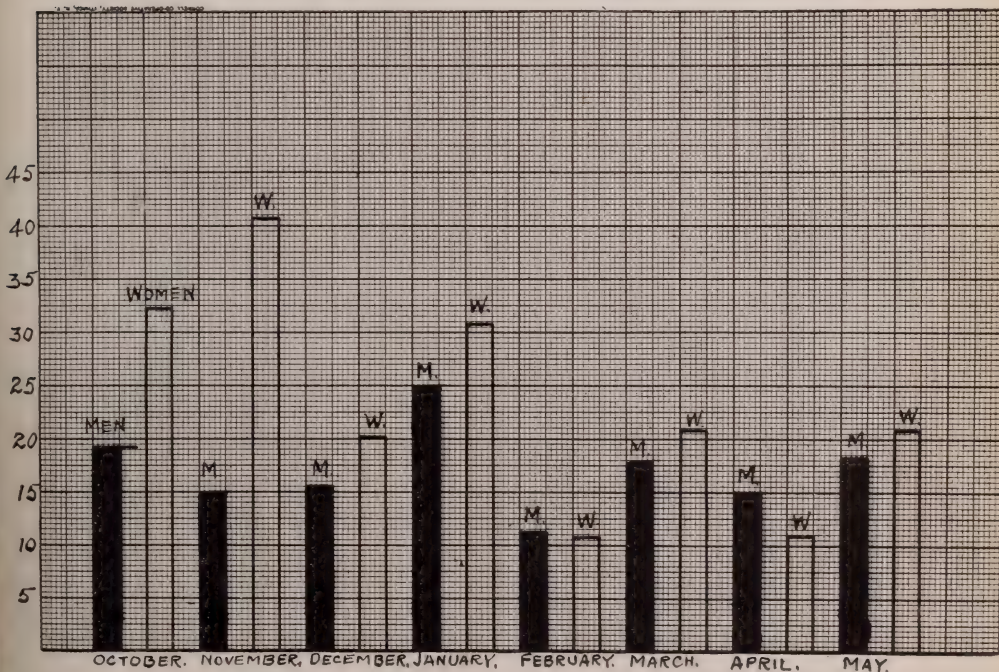
4. **Physiology of Assimilation and Elimination.** Prof. S. Simpson. The processes of ingestion of nourishment, digestion, and the excretion of residue. The gastro-intestinal tract and accessory glands and processes.

5. **Physiology of Respiration and Circulation.** Prof. S. Simpson. With demonstration of the Schaefer method of artificial respiration.

6. **Vital Statistics and Health Con-**

CHART 6

COMPARISON OF TOTAL NUMBER OF CASES OF ALL ILLNESS IN MEN AND WOMEN STUDENTS, CORNELL '19-'20
EXPRESSED IN CASES PER HUNDRED PER MONTH.



trol. Prof. Wilcox. Dependent upon methods of measurement. Vital statistics means of measuring army and civil health. Records show health within human control. Proof that community health is purchasable.

7. **Vital Statistics**, continued. Prof. Wilcox. Areas, classes, and causes of good and bad community health conditions. Limits of probability in death rates. Healthiest and unhealthiest countries, states, region (compare with rural regions). Death rates. Modified by sex, age, race, civil state, occupation. Changes in death rate from tuberculosis; from cancer. Measure of economic loss from typhoid epidemic.

8. **Report of University Health**. Prof. Emerson. Noting improved conditions with regard to acute respiratory tract infections. Special comment upon two groups affected by food poison. Discussion of food poisoning from chemical products; from bacterial action, and in susceptible individuals from wholesome food. Measurement of sickness in army and civil life by morbidity reports. Mortality of disease modified. Diseases without death incidence. Portion of community constantly sick. High and low rates by age and occupation. Morbidity more valuable than mortality to determine policies and measure results. Indices of community's health. Introduction to preventable diseases which are communicable.

9. **Tuberculosis**. Dr. Donald B. Armstrong, Framingham, Mass. Its importance as a cause of death, its history, extent, how it is acquired—prevention, treatment, cure. A disease originating in unsuitable artificially created living conditions and to be overcome by individual and social improvement in these conditions.

10. **Venereal Diseases**. Dr. Wm. F. Snow, American Social Hygiene Association. This lecture was delivered only to the men students. One of the series of lectures under Dr. Snow's di-

rection was given by his assistant, Dr. Kleinschmidt, assistant in the office of the American Social Hygiene Association. This lecture was illustrated by lantern slides and sections of "movie" films used in general public education, and in the army here and abroad. Four lectures for women were given upon this subject by Dr. Eleanor B. Bertine, of the Bureau of Social Education War Work, Council of National Board, Young Women's Christian Association, New York City.

11. **Illustrated Lecture. Dealing with water supplies**. Prof. H. N. Ogden. The dangers of pollution and the methods of their sanitary control and protection. This lecture dealt with both individual private rural supplies and the commercial or community supplies.

12. **Limitation or Control of Communicable Diseases**. Prof. H. Emerson. Control of epidemic, quarantine and disinfection. Means available and desirable.

13. **Sewage Disposal**. Prof. H. N. Ogden. As a means of preventing disease and maintaining cleanliness of soil and water supplies. Disposal of human and industrial wastes and their contribution to the standard of living and general sanitation.

14. **Immunity and Infection**. Dr. Veranus A. Moore. Protective forces of the body, external and internal. **Immunity**. A condition of the body that prevents the development of infecting organisms, but if they are able to multiply, neutralizes their injurious effect—natural, acquired, active, passive, toxic, bacterial. Explanation of immunity, phagocytosis, side-chain theory.

15. **Infection**. Dr. Veranus A. Moore. Especially of the intestine and lungs. Discussion of infection including definition and the various ways by which it takes place in the lungs or intestine or both. Organisms gain entrance to the body through food, milk, water, dust. Description of organisms and tissue re-

action. Lantern slide demonstration illustrating the facts.

16. **Sanitary Chemistry.** Mr. F. R. Georgia, Instructor in Chemistry. Definition of sanitary chemistry. Relation to other sciences. Some applications of sanitary chemistry. Examination of water supplies, water purification, methods and control. Sewage disposal, methods and control. Garbage disposal, methods and control. Food and drug inspection. Control of food manufacture.

17. **Sterilization and Pasteurization.** Prof. H. Emerson. Limitations of control of communicable diseases dependent upon early and accurate detection of infections and diagnoses of cases. Limitation of infection to the infected person. Destruction of infectious discharges. Quarantine or isolation and disinfection which have for their objective the localizing and destruction of pathogenic bacteria. These are only partly effective. Sterilization not synonymous with disinfection. Disinfection not necessarily sterilization. Importance of spore forming bacteria. Sterilization rarely necessary in public health work, except in the case of anthrax, tetanus, and a few other less common infections. Selective sterilization is pasteurization. Pasteurization defined. Sterilization defined. Fractional or intermittent sterilization described. Control of fermentation and putrefaction without heating by drying, smoking, salting, brining, sweetening and sealing of foods. Reasons for pasteurization of milk and milk products. Advantages of pasteurization. Methods and results. Changes in milk due to pasteurization and sterilization. Sterilization as a surgical procedure. Freeing wounds from infectious bacteria by biological processes. Inability to sterilize mouth, skin, bowels and blood without destruction of human cells and tissues. Attempt at "sterilizatio magna" by salvarsan. Biological destruction of bacteria by vaccines and phagocytes.

18. **Food Chemistry.** Prof. G. W.

Cavanaugh. Food: General composition, properties and functions. The general composition of food stuffs was outlined under the following heads:

- A. Moisture and dry matter.
- B. Organic matter and mineral matter or ash.
- C. Proteins.
- D. Carbohydrates.
- E. Crude fiber or cellulose.

Definitions of these several component parts were given. The relation of the chemical composition of these constituents to their function in the body were pointed out, as for example, that the proteins were necessary for cell and muscle building, and the ash of foods were essential to bone making. The relative calorific power of the carbohydrates to fats was explained. It was also pointed out which of our foods were high or low in the several important classes of food constituents.

19. **Administrative Control of Food Supplies.** Prof. Emerson. Public health control of food supplies necessary to secure honesty of labeling, constancy in quality and food value of products, and freedom from poisonous, harmful, inferior or fraudulent substitutes. The functions of a completely developed Public Food Control Bureau under Health Departments. Consideration of Federal Pure Food Law, which is a law against misbranding. Resulting decrease in adulterated food since 1906. Honest labeling the heart and soul of the pure food movement. Standardization of milk control. Meat inspection national and local.

20. **Diseases Due to Disorders of Nutrition.** Prof. Emerson. Nutrition defined. Brief description of what starvation means, indicating that it may follow deprivation of various foodstuffs, including water, according to their relative importance or necessity. Possible duration of life after deprivation of different foods. Excessive luxury consumption of foods, and the economical diets compatible with health and develop-

ment. Classification of diseases caused by food or lack of them: Those due to the quality of the food, that is, chemical and bacteriological constituents having poisonous effects upon humans because of putrefaction or infection. Diseases due to the kind of food or food content (a) Individual susceptibility to a particular food substance, such as fish, berries, etc., effect being similar to serum sickness or hay fever; (b) Individual intolerance to a group of foods as in diabetes and gout; (c) Universal inability to tolerate deprivation of certain substances such as vitamins as well as the more common foods—instances, malnutrition of children, pellagra, berri-berri, scurvy, rickets, war edema, fat starvation, goitre, calcium, iron and salt starvation. Brief description of pellagra, its incidence, death rate, distribution, cause and remedy. Reference to berri-berri and its distribution, noting infinitesimal amount of certain substances found essential to health. Brief reference to scurvy, rickets, and malnutrition of children giving their importance, causes and remedies.

21. Economic Aspects of Industrial Hygiene. Prof. C. K. Drinker, Harvard School of Industrial Hygiene. The health of the working population of the United States represents an economic problem of first grade importance. Draft statistics disclose the fact that four hundred and sixty-eight out of every thousand young men examined exhibited some easily detectable physical or mental defect. Many of these defects, such as hernia, are of major industrial importance both to the manufacturer and to the laboring man. The industries present evidence that the hiring of physically defective individuals is a source of great yearly expense to the country. Such men should be accepted for work and placed in jobs fitted to their physical capabilities, thereby reducing the billion and one-half working days which are lost as a result of illness and disability every year. Evidence accumulates to show that minor ills cause a large part

of this absenteeism, and the progressive modern manufacturer can only meet these ills through the organization of a thoroughly good health department in his plant.

22. Hazards of Industry. Dr. Wade Wright, Asst. Professor of Harvard School of Industrial Hygiene. Conditions peculiar to industry which may affect the health of workers. Conventionally called hazards, and are grouped under several heads: Illumination, Noise, Ventilation, Heat and Cold, Humidity, Poisons, Infections, Fatigue, Mechanical. Consideration of the health of industrial workers a public health problem.

23. Air, Ventilation and Bodily Cleanliness. Prof. Emerson. The subject of air was considered as if air were a gaseous envelope serving the functions connected with interchange of gases in respiration and regulation of body temperature. The physical properties and chemical differences of atmospheric and expired air. The facts concerning the oxygen, nitrogen, argon, ozone, hydrogen peroxide, mineral acid contents and CO_2 of the air were dealt with briefly. The physical problems involved in diminishing and increasing atmospheric pressure, the movement of air, the temperature of air, humidity, absolute and relative. Odors, light, smoke, fog, dust and poisonous gases were dealt with. The value of freely flowing cool, clean air as a means of stimulating heart action, respiration, mental and physical alertness and the processes of digestion and metabolism, were considered. The necessity of change of air by motion and the limits within which air and floor space must be controlled for human safety, were touched upon. The value of training of the skin by daily exposure to cold water and cool air was emphasized.

24. Military Sanitation. Asst. Prof. J. S. Allen. (To Men.) Necessity for instruction in military science. Necessity for sanitary control in army. Anti-typhoid and smallpox vaccination; necessity for results. Applies both to civilians

and military. Selection of camp site. Water—necessary, provisions for keeping clean; methods of sterilizing. Soil—kinds, best sandy or sandy loam; clay the worst. Drainage—necessary to prevent mud. Vegetation—poison ivy and brush. Layout of camp. Provide water and latrines first. Kinds of latrines. Location in camp. Protection from flies. Arrangement for use of water in stream—men drinking, horse drinking; wash men, wash clothes.

24. Flat Feet and Foot Trouble. Dr. Margarete Baker, Medical Adviser of Women. (To Women.) Percentage of soldiers examined for army service with foot-trouble. Percentage of students with foot-trouble. Foot-apparel: Stockings should not be too short, nor too pointed. Shoes, proper heel, toes, uppers. Flat foot: definition of, mechanism of flat foot; etiology, (1) toeing out, (2) tight stockings, (3) pointed shoes, (4) improper sleeping habits, (5) relaxation of muscles due to fatigue; (6) too early use after illness, (7) injuries. Correction: (a) exercises, (b) wedge-shaped lifts, (c) Whitman's arch, (d) proper walking. *Hallux Valgus*: definition, etiology, treatment. Hammer toe: definition, etiology, treatment. Corns: formation, treatment, soft and hard corns. Ingrowing toenail, etiology, treatment. Excessive sweating of feet, etiology, treatment, mild and severe cases. Chilblains, etiology, treatment. Frost-bite, etiology, symptoms, treatment. Affections of the regions of the heel.

25. First Aid. Asst. Prof. J. S. Allen. (To Men.) Accidents are frequent. Persons versed in First Aid procedure should be present. Worst thing to do in case of accident is to lose your head. Wounds are: contused wounds, bruises, etc., skin not broken; lacerated wounds, caused by tears; incised wounds, caused by knives, razors, etc; punctured wounds, caused by nail, pitchfork, etc. Appropriate treatment and dangers of each.

Cleanliness. Control of hemorrhage. Use of and position of tourniquet.

25. First Aid. Dr. Margarete Baker. (To Women.) Drowning: causation, treatment, resuscitation. Demonstration of: (1) Shaefer's method, (2) Howard's method. Sunburn, Heat-exhaustion, Sun-stroke, Fainting: etiology, lack of blood in brain, habit of fainting, sight of blood or accident, may be sudden or gradual. Treatment. Poison ivy and poison oak. Insect bites and stings burns and scalds: definition of burn, of scald; description of, degrees of burns, symptoms, treatment; acid burns, alkaline burns.

26. Mental Hygiene. Dr. Thos. W. Salmon, National Committee for Mental Hygiene. Three phases of mankind's attitude towards disease: Submission, Self-defense, Aggression. Science has given us opportunities to defend ourselves against disease and to attack it, to eliminate it. Defensive mental hygiene protects organ of the mind. Damage from without: syphilis, other infections, alcohol, drugs. Damage from within: endocrine disorders, terminal disease. Fifty percent in New York State hospitals fall in above two groups to be reached by general preventive medicine. Field of eugenics offers possibilities of salvaging defective material.

Positive Mental Hygiene. Undamaged brain present but mental life is full of difficulties. Object of hygiene is "to render growth more perfect, decay less rapid, death more remote, and life more vigorous and successful." We practice mental hygiene if we prevent interference of mind by abnormal fears, anxieties, doubts, inhibitions and compulsions which may ruin the happiness and usefulness of an individual. A personal problem, to be met by individual effort.

Importance of emotional side of mental life. In most important affairs it is feeling rather than thinking and intelligence that plays the greater part. Medical psychology is concerned with emotions

chiefly. Appeals to emotion always indirect, in spite of the dominance of attention to training of intelligence in a university. Emotional life must be studied in the social environment in which human beings live, work, love and die. Reticence in matters of intimate and delicate reactions. Crises in life determined by feelings which we later try to rationalize as bases of thinkings. Necessity for adaptation in emotional matters.

Adapt or perish. Tin hat, gas mask. The wasted instincts in domesticity. Most important mechanisms of human adaptation are largely mental. Types of failure give us mental diseases: psychoneurosis, eccentricities, criminality. The community is essential to make all or part of the adaptation that its individuals are incapable of making themselves. Successful adaptation constitutes mental health, and vice versa.

Causes of more difficult mental adaptations, conflict between free instinctive behaviour and the requirements of society. Casualties from repressions or unsatisfactory solutions. Psychoses, psychoneuroses, suicides, complexes. Effect of bringing exact nature of conflict into consciousness and dealing with it on level on which it originates.

Influence of the war. Great experiment in mental adaptation. Methods of management of the psychoneuroses which resulted from unsuccessful adaptation. Similarity and differences between psychoneuroses of soldiers and those of civil life. Valuation of experience and possibility of duplicating results.

Mental hygiene more than a defense of the central nervous system. Difference between issues of general and mental hygiene, but similarity as to equal importance of knowledge of processes of disease and maintenance of health. Intelligent persons must become familiar with mental as well as physical mechanisms of life. Susceptible to modification and control. Need frankness and fearlessness in nature of important emotional reactions. Reward not chiefly prevention

of mental disease, but liberation of resources, elimination of pathological fears and doubts, increase in usefulness to others.

27. Cancer, and Summary of Principles Dealt With in Course: Results. Prof. H. Emerson. This lecture dealt with the subject of cancer, its prevalence by age and sex. The necessity of lay information in order to permit of early diagnosis and curative surgery. Cancer not a hereditary, or contagious, or constitutional disease. Cancer a lawless growth of tissue usually due to irritation, friction, ulcers, etc. Not painful in its early stage. Always local in beginning. Characteristic causes of cancer of lip, and mouth, intestinal tract, breast, uterus, and skin. Precancerous stage curable. Operative cure possible in high proportion of cases. Warn against internal medication. No treatment to be used without examination. Massage and Osteopathy unfit. X-ray of value in diagnosis. X-ray and radium of some value in selected cases for superficial and deep cancers. Caustic pastes neither safe nor controllable, and should not replace surgery, which offers best chance of permanent cure.

BRIEF SUMMARY OF PRINCIPLES DEALT WITH IN COURSE AND RESULTS IN STUDENT BODY

We are constantly adapting our bodies and minds to limitations and dangers of artificial group existence. The students have shown that they have acquired the basic understanding of causes and personal prevention of various communicable diseases, and of certain preventable diseases of occupation and diet. They know something of the things which are done for them through sanitation, to them for specific protection, by themselves for their own protection by personal habits, for others as a social group as members of organized society. What have been the results? One and six-tenths percent of all possible days of students' time in the college here have

been lost on account of sickness. Eighty-one hundred and twenty-seven cases of sickness of which forty-six hundred and forty-nine were due to preventable causes as follows: 2,631 respiratory infections such as colds, pneumonia, pharyngitis, laryngitis, tonsillitis; 391 acute infections, chiefly influenza, but including measles, scarlet, mumps, chickenpox, syphilis and gonorrhea; 800 cases of skin affections including boils, furuncles, impetigo, body lice, ringworm, scabies; 827 cases of digestive disturbance, including gastritis, enteritis, constipation and indigestion.

On numerous occasions during the year reports were made to the student body as to the health of their community, the prevalence or control of certain communicable diseases or group expressions of preventable disorders, based upon the statistics of the medical examiner's office.

The subject of sex hygiene was particularly explained in the lectures on venereal disease, given to men and women students separately, and was the subject of especial personal inquiry, explanation, and teaching to each student at the medical conferences in the second semester.

MEDICAL CONFERENCES

Instead of making use of the required visit to the medical examiner in the second half year for a routine repetition of the physical examination, this occasion was used to learn the degree to which the teaching in the department had obtained results in terms of student application.

During the second semester every student must report at the office of the medical examiners for a personal conference as to his or her manner of living, understanding of personal hygiene and health since previous date of record. This is perhaps the most valuable opportunity for teaching health habits and bringing home the relationship between personal conduct and health, that the University offers. The density of the ignorance of the boys and girls as to the elementary facts and functions of their

bodies is astounding. Expression of gratitude for helpful advice and open-hearted discussion of personal habits, is the rule during these conferences, of which 4,497 were held. This was considered an integral part of the compulsory course in hygiene. The items taken up with each student at these conferences were made a matter of record, whether or not any additional notes were made of physical examination findings. (See Form D).

SANITARY CONTROL AND EPIDEMIOLOGY

The Assistant Professor of Hygiene makes himself responsible for the functions of university health officer and epidemiologist.

Water Supply. The water supply comes from a supervised watershed. The water is filtered and chlorinated, and there is regular chemical and bacteriological examination of water. Water is distributed in a closed system and is available through bubbling fountains at many points in the buildings. The type of fountains is open to some criticism, but as operated they are in the main safe from a sanitary point of view.

Swimming Pools. In the men's swimming pool, the water is continually flowing, the pool is emptied and scrubbed every Saturday. The water is chlorinated with lime three times a week, and the men are required to take a shower before entering the pool. The water used is the regular university supply and is kept at a temperature of from 68° to 75°F. The same requirements pertain to the small pool for the women.

Sewage Disposal. The sewage of the city is collected by sanitary sewers and runs into a septic tank from which it discharges into the inlet, and then into the lake.

Milk. The milk is pasteurized and comes from inspected sources, but for some reason, not fully understood, the University and the city enjoy an exemption from the requirements of the public health law of the state, so far as the labeling of grade, date and source of milk

is concerned. Bacteriological examination of the milk as delivered is not used to check the quality of the supply, and the occasional souring of milk as used in the clubs and cafeterias, even in cool weather, suggests that the quality of the supply is below safe standards.

Ventilation. The ventilation of lecture halls, laboratories and eating halls leaves much to be desired, and will continue to be poor until an instructed janitorial service is established which will maintain standards to be proposed by the Department of Hygiene, replacing the control or neglect of room ventilation by the teachers of the University. Neither temperature nor air movement meets the minimum requirements for the students in class rooms and laboratories, with rare exceptions.

Flies. There is no nuisance from stables and flies in or near the university. Screening of kitchens and dining rooms during fly season is fairly complete. A good grade of stable housekeeping prevails within university grounds and on the farm.

Common Cups and Towels. Common cups and roller towels have not been found in use within the jurisdiction of the university, and their use in public places is forbidden by local sanitary law.

Cafeterias. The cafeterias do not in all instances as a routine boil the eating utensils after use, although soap and hot water are used as in ordinary household practice. The passing of all eating utensils through boiling water for five minutes after they have been washed with soap and water and rinsed, would probably diminish the incidence of diseases spread by saliva and discharges of the upper respiratory tract. This procedure has not been enforced as yet.

Certain disadvantages are apparent in the cafeteria system of food supply. The self-serving prevents the intervals of waiting, which are conducive to good digestion. Conversation is reduced to a minimum with consequent loss of that accessory of eating so desirable for the

development of effective digestive juices, namely laughter and good fellowship. The food is of excellent quality, well prepared and of good variety. The chief error noticed in the selection of food by students is their failure to give to fruits and green vegetables, cooked or as salad, their proper place in a mixed diet. Rapidity of eating and altogether too short a time spent at table for all three meals are prevailing and unhygienic habits. A dietitian of the University supervises the selection of cafeteria dietaries.

Living Conditions Away From the Campus. No systematic inspection of living rooms and dormitories has been attempted. Overcrowding does not exist. Adequate water facilities for bathing and for toilet use are available. Heat is supplied sufficient to meet all reasonable needs. There remains the element of fresh air where the students sleep, or study in their rooms, and it is evident from inquiries that the open window is not as universal as is desirable. Education rather than inspection is thought to be the best way to correct the indifference of young, healthy people in this direction.

Administration. Authority over physical education is vested in the Professor of Physical Education. Authority over sanitation of environment, control of disease, medical examination of students, instruction in hygiene and preventive medicine, and medical care for minor ailments are vested in the Professor of Hygiene and Preventive Medicine. The care of the sick is under the direction of physicians employed by the students and only when this care is at the infirmary is there even a general supervision of the quality of service provided.

The two departments above mentioned are included within the University Faculty, as distinct from the faculties of the component colleges of the university, and their functions are in large measure to carry out the policies required for the physical well-being and protection of the

whole student body. There is friendly coöperation between the Graduate Director of Student Athletics and the departments of Physical Education and Hygiene and Preventive Medicine, and among these three and the Army Officer in charge of military drill.

The final authority in sanitation of university premises is considered to rest with a committee of the Faculties including a sanitary engineer, a physician and an executive officer of the President's office. The Assistant Professor of the Department of Hygiene and Preventive Medicine is considered to be the responsible inspectorial and critical representative in sanitary matters. The enforcement of sanitary standards in the watershed, and in general in the grounds and premises of the University rests with the superintendent of buildings and grounds.

Research. The research work of the Department of Hygiene and Preventive Medicine has been confined to the field of statistical study of morbidity reports, to obtain a basis of fact and comparison for results of the measures of control, examination and education employed. Immediate use of current morbidity data has been made throughout the lecture course, to point the lesson of personal responsibility for preventing and controlling preventable forms of sickness.

The four groups of diseases which

have been particularly followed and from which material has been drawn to stimulate interest in self-protection and in unselfish protection of the group have been: the communicable diseases, scarlet fever, measles, mumps and whooping cough.

The respiratory tract affections, including colds, grippe, coryza, rhinitis, tonsillitis, pharyngitis, laryngitis, tracheitis, bronchitis, pneumonia and pleurisy.

The communicable diseases of the skin. The diseases of the digestive tract.

These have been studied by sex, by month, by total incidence and by numbers of days lost.

CONCLUSION

It is the belief of those responsible that with modification in the educational methods to permit of employing the recitation as a means of explaining and discussing the subject matter of lectures and text books, by the grouping of students by sex and college to permit of more direct appeal to group needs and interests, and by the placing of the college infirmary and the practice in it under the direction of the Department of Hygiene and Preventive Medicine for administrative and clinical purposes, the plan of student education and protection as above described can be made to provide a valuable health asset to the students, to the graduates and all who come within their sphere of influence.



Chillicothe, Ohio, is a city in which the Board of Health has issued a regulation that all milk sold in the city must be pasteurized by an acceptable method or must come from tuberculin-tested cows. Those who supply the milk are given until August 1, 1921, to prepare themselves for compliance with this regulation.

Chillicothe has already a regulation

whereby workers in bakeries are among those subject to a physical examination by the Health Department. A medical certificate will be required of every employee, and employers will not be permitted to employ a person who does not possess this certificate. The city Board of Health has furthermore decreed that hogs shall not be kept even within the extreme city limits.

SYMPOSIUM ON HEALTH SUPERVISION IN COLLEGES

II. SUPERVISION OF HEALTH IN COLLEGES AND UNIVERSITIES

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Read before Session on Personal Hygiene, American Public Health Association, at San Francisco, Cal.,
September 15, 1920.

IT IS my purpose in presenting this subject, the supervision of health in our colleges and universities, to show the relationship that it may have to the community health. I realize fully that this meeting is a gathering of workers from all the various public health activities and that wherever it can be shown that the aims and activities of health supervision in colleges and universities are applicable to general health work, this should be done.

With a view of emphasizing this relationship, I feel that a few words concerning the present trend in public health interests and activities will be of value before taking up the specific duties of university supervision.

PAST PUBLIC HEALTH ACTIVITIES

Prior to the World War, our chief public health activities were confined to the control of the environment. If typhoid fever "broke out" in a certain locality, the sanitarian was sent out with a view of making an inspection of the premises concerned and directing the people to clean up. If diphtheria became rampant, the schools were closed early and the schoolhouses received the usual innocuous fumigation. The general assumption was that germs of disease lurked in dark rooms or filthy alleys patiently awaiting the innocent passerby with the determined objective in view of "jumping onto him." Such was our belief of disease in general and of tuberculosis in particular. Further, it was commonly held that diseases traveled a long distance through the air. The term malaria, which means "bad air," illus-

trates this belief. Hospitals for infectious diseases were located at some distance from the city.

Therefore, we legislated against and made provisions for the control of the environment. Restrictions were made as to the location of slaughter houses, pig sties, corrals, etc. Health laws and regulations were in general concerned with street cleaning, garbage disposal and the abatement of nuisances. Water purification and sewage disposal received consideration. The public roller towel and the drinking cup fell within the ban of the health department.

Then we "set up" state and municipal boards of health and proceeded to hold them responsible for our health. If an epidemic broke out the invariable public reaction was: "What is wrong with the health department?"

On the whole, we had become more or less satiated with the apparent success of our health activities. We expended much money and each state, municipality and district in our country possessed a board of health that would "see to it" that health was equally disseminated to all our citizens. In fact, we openly boasted that America was a nation of super-health and strength. Did not our American youths return from the world's Olympics wearing the laurels of victory? Are not the world championships in boxing, wrestling and in a host of manly sports held by Americans? What better specimens of active and virile manhood can be presented than the football eleven? Assuredly such evidence bespoke a nation of unrivaled physical vigor.

THE NATIONAL DELUSION

Wars have their virtues in that they make the nations engaged therein conscious of their own weakness. Perhaps our greatest national delusion was dispelled when we began to muster in the man power for our armies. For the first time in the history of our country a far-reaching health census was taken, the draft examination. "One-third failed to pass the physical examinations." Under this caption was heralded the humiliating results of the nation's first attempt to raise an army. One-third of the very prime of American manhood failed to pass the ordinary tests of physical fitness. No attempt was made to select supermen.

Previous to this forceful and lamentable discovery of our general national physical retrogression, however, numerous warnings had appeared from time to time. Infant welfare workers had called our attention to the hazards of babyhood. More than 300,000 children under five years of age die annually in the United States. And the majority of these deaths are preventable. Such then is our reckless wastage of infants. Educators had warned us repeatedly of the deplorable physical condition of school children. Of the 22,000,000 or more of our public school children, 16,000,000, or 75%, have physical defects which are potentially or actually detrimental to health and efficiency. Life saving agencies had informed us that as the middle period of life is reached, a sound physique was a rare finding. But we took little heed. It required the war to make us realize the seriousness of our deplorable condition.

Thus a national delusion was dispelled.

THE PROMOTION OF HEALTH

What then was wrong with all our past expensive and energetic health activities? We had dealt chiefly with things, environment. We had failed to deal intensively and extensively with the person or people. Ignorance of the

fundamental laws of right living and its invariable accompaniment, neglect of the body, are responsible in the very largest measure for this present national problem. Hereafter the education and control of the individual will be the foundation of all effective health work.

Education of the people is the only means a democracy has for the correction of this evil. The promotion of health is fundamentally an educational matter. Every citizen must be potently impressed with the urgent need of building up and maintaining a strong, healthy, harmoniously developed and active body; and to accomplish this he must know the role that food, air, activity, rest, poisons, physical defects and mental instability play in impeding or promoting health.

No country can maintain a position in the vanguard of civilization if its citizenry is made up of subnormals. The individual must be made to feel that positive health is fundamental to his own welfare and to the permanency, security and advancement of our nation.

Nor must this education be delegated to some more or less obscure feebly supported health agency. It must be an integral part of our educational system. The promotion of positive health must be of greatest concern to all interested in the welfare of the state. We must no longer tolerate that ignorance and neglect which imperils the nation in times of great crises. We must have young men physically able to support the supreme obligations of citizenship when the very existence of our country is dependent upon its man power. Thus good health becomes a question of patriotism.

Further, society is going to concern itself more and more with the subnormals. The physically and mentally defective are millstones tied to the neck of society. They are economic burdens. It has been estimated that at least one-half of our American people who should be economically productive are not "holding up their full end of the burden" because of preventable subnormality, and are being

supported wholly or in part by the other half which is industrially active.

Assuredly, the promotion of health is an educational problem. Like education, it must reach every individual.

THE PREVENTION OF DISEASE

Future public health activities will be concerned with two problems: the promotion of health and the prevention of disease. The two require more or less separate interests. No matter how strong and resistant the body may be, ingestion of sufficient numbers of virulent tubercle or typhoid germs will cause these diseases. The promotion of health is a personal matter. The prevention of disease is a community affair. It has already been shown that the promotion of health is primarily a problem of education. The prevention of disease is even more intimately related to education.

That there is an appalling annual waste of human lives in America may be readily seen from the following list of principal causes of deaths in the United States for the year 1918, as compiled by the census bureau. It must be pointed out here that these figures show the mortality in only 77.8 percent of the population. To estimate the total number of deaths, each figure below should be increased by 21.2 percent, or approximately one-fifth.

In the death registration areas of the United States (77.8 percent of our population) there were 1,471,367 deaths for 1918. Because of influenza, the number of deaths for this year is higher than in other years. The number of deaths from the chief causes are tabulated as follows:

1. Influenza	244,681
2. Pneumonia	232,786
3. Tuberculosis	122,040
4. Whooping cough, Diphtheria, Measles, Meningitis	41,874
5. Diarrhoea Enteritis.....	59,109
6. Typhoid Fever.....	10,210
7. Dysentery	4,725

8. Degenerative diseases, including	240,889
9. Disease of the heart.....	124,688
10. Disease of the blood-vessels	83,931
11. Disease of the Kidneys	32,270
12. Cancer	65,340
13. Congenital malformations and debility.....	63,375
14. External causes, accidents..	82,349

This list of principal causes of death in the United States should be familiar to every public health worker. It shows us where we must concentrate our efforts. It helps us to discern between that which is most worth while in public health work and that which is not so important or essential.

Further, this list of the causes of death is so arranged that it shows the mortality due to diseases that are more or less preventable and, therefore, belong to those interests or activities which have for their object the prevention of disease, or community health. The first seven items, or one-half of the list, belong to this group.

The second half of this list, items 8 to 14, inclusive, gives the causes of death that are more or less due to ignorance and neglect on the part of the individual and, therefore, may be included within the realm of those operations which are concerned with the promotion of health, personal hygiene.

Of course, it is impossible to differentiate definitely between the abnormal bodily processes that are of community origin and those of individual origin. They overlap and are inextricably interdigitated.

It must be borne in mind that these figures show the actual deaths for approximately four-fifths of our population, due to diseases that are in the largest measure preventable. Just what a human life is worth in dollars and cents depends upon many factors. It is rather sordid to consider human values from a financial basis. However, economists

have endeavored, although unsatisfactorily, to ascertain the money equivalent of human life. Fisher computes the annual loss from deaths, in the United States, to be \$1,070,000,000. This is based on an estimate of \$1,700 for each life.

We must not forget that this loss is for actual deaths. The economic loss as a consequence of preventable diseases, which render the victims economic burdens, must reach several billion dollars. Assuredly the payment of our war debt would be an easy matter, if we could eliminate human incapacity, sorrow, suffering and poverty that are brought on by preventable diseases.

The prevention of disease is largely a personal matter and must be achieved through dealing with the person. How shall we proceed to deal with the person? Every responsible individual must be made familiar with this fact, that the majority of our serious communicable diseases are spread by contact infection, that is, spread from one person to another. It is the person infinitely more than the thing that must be feared in disease transmission. Social intercourse is responsible for at least 95 per cent of our communicable diseases. In other words, if you contract tuberculosis, diphtheria, or scarlet fever, the disease was passed on to you by some one else harboring the germs who had recently "crossed your path," and been in fairly close association with you.

Now if we look once more at the list of the principal causes of our mortality, we will find that influenza, pneumonia, tuberculosis, whooping cough, diphtheria, measles and meningitis claimed 641,381 people. These diseases, with scarlet fever, mumps, smallpox, chicken pox, common colds and tonsillitis and their complications are responsible for not far from one-half of our national morbidity and mortality. They are spread by discharges from the mouth and nose and depend in the largest measure for their transmission on direct contact infection.

It is precisely here where the com-

munity idea of health comes in. No community is healthier than its one or more infected inhabitants, disease carriers. A chain is no stronger than its weakest link. A social unit is no healthier than its loose tuberculous victim. One carrier of typhoid germs may be of infinitely greater danger to the community than failure to observe all the laws on our statute books regarding sanitation. Rigid enforcement of regulations pertaining to garbage removal, street cleaning, slaughter houses and a host of other sanitation measures, will do practically nothing to minimize the dangers of those diseases which are spread as a result of social intercourse. We have made but little progress with the control of those diseases which depend for their spread on human contact—venereal diseases, influenza, tuberculosis, pneumonia and others.

On the other hand, we have made great progress in the control of those diseases which are more or less dependent on "things" for their transmission. Plague no longer worries us because we have made and can make a successful war on the rat, when this disease threatens. Yellow fever and malaria are rapidly succumbing as the conquest of the mosquito progresses. Typhoid fever, cholera and other water-borne diseases are gradually being eliminated because people in general insist on and make provisions for pure water. Our great success in checking these diseases is due in the largest measure to efficient health agencies, for they can successfully cope with those diseases which depend for their transmission on factors other than people. When it comes, however, to the control of human contact infection, the health agencies' efforts are relatively of little avail because they must deal directly with man himself and the average man at present does not want to be regulated.

EDUCATION AND PUBLIC HEALTH

The control of the individual then, is the solution of our future health prob-

lems. Laws and remedies of one kind or another, even if good, are unworkable unless the people themselves want them. Only by the education of the masses in character and by leading them to realize the value of *positive* health and their individual responsibility in securing it for themselves and their community, can a society be developed that will be physically sound and that will effectively reduce and help to eradicate preventable physical defects and preventable diseases. All other methods will fail. Our greatest achievement in this matter will be reached when the desire for and methods of securing health become ingrained in the human consciousness. Each individual must be made to realize potently that the maintenance of positive health, a sound, active and vigorous body, is a sacred obligation he owes to himself, to his family, to his fellowmen and to his country; that he must maintain the highest degree of health so that he can carry on his share of the economic burdens, thereby adequately providing for his family and minimizing human unhappiness, misery and poverty; that he must remain free from disease so that his fellowmen may be protected.

When the majority in a community or district are well informed regarding the fundamental of right living, the promotion of health, and the sources, routes and prevention of communicable diseases, real progress will be made in that community in the promotion of health and prevention of disease, in public health—and not until then.

Education of the masses, then, becomes the chief problem and activity of the future health work. This education must be as broad and long as is that education which stands for good citizenship. It must be an inextricable part of our public school system, our colleges and our universities.

RESPONSIBILITY OF THE UNIVERSITY TO PUBLIC HEALTH

The university was established and is maintained as a guide of the people and

an ally of humanity in its struggles for advancement. Since health is fundamental to the welfare and advancement of society, the responsibility of the university to the people in matters pertaining to health is a most important one. As the state university is, in general, at the head of the public school system of the state and from it radiate the substance and methods of general education for the masses, so should it be at the head of the health of the state.

Therefore, the university must make provisions for its study, teaching and advancement. It must determine through university methods what is worth while, and what should be taught in matters pertaining to the promotion of health and the prevention of disease. It must, through carefully planned, required courses, impress upon every student the fundamentals of personal hygiene and community health. Since the university is a community in itself, it must provide for a health center wherein the practices of health promotion and disease prevention can be put into effect. Further, it must arrange for the training of public health leaders and workers.

REQUIRED COURSE IN HYGIENE AND PUBLIC HEALTH

The most far-reaching and effective means by which colleges and universities can supervise students' health is the education of all its students in the fundamentals of health promotion and disease prevention. Every college can, and should, do this and it should be in the nature of a required scientific course in hygiene and public health for all entering students (academic credit to be given) wherein the fundamentals of health promotion and disease prevention are effectively considered. Only the essential facts in personal hygiene should be emphasized, such as nutrition, the balanced diet; air-ventilation; activity, need of exercise for the harmonious development of the body and for maintaining positive health; rest, amount and regularity of sleep and the avoidance of fatigue and

overstrain; bodily poisons, evacuation and elimination, focal infections and the rôle they play in producing bodily infirmities; defects, the avoidance and correction of such defects as the draft examination revealed; mental hygiene, conservation of the mind, mental efficiency, the prevention of neurosis and psychosis, the need of proper social adjustment.

The greatest stress in this course should be placed on the prevention of disease and on community health. After due consideration of the nature, source and routes of infection and the methods of blocking these routes, the student will readily appreciate that the health of every member of his social unit is of grave concern to him. For of what use is it to concentrate all health interests and activities on one's own body if at the same time, one's bed-fellow has active tuberculosis?

Then the student will be given a clear grasp of what is essential and worth while in community health work. He will be impressed with the necessity of every member in his community, taking frequent physical examinations in order to detect diseases in their early stages, and to discover defects. After all, it is the frequent compulsory physical examination (when the masses are educated it will no longer be compulsory, but voluntary) which will be the real foundation of genuine public health work. As man himself is the source of practically all our communicable diseases, the physical examination will discover the source. When the source is discovered, the carrier and disseminator of germs will be taken out of society and treated in the hospital until free from contamination. This is community health in a nut-shell. Had this been our past method of dealing with disease, would not the problem of tuberculosis now be settled?

Of course, the student will become interested in everything concerned with community welfare and health—housing, recreation grounds, working conditions, sewage disposal, pure water,

wholesome milk and food. All these must receive their due attention in this required course in hygiene.

It is these students who later will become the teachers and leaders of men. Much may be expected for the advancement of public health through this source, wisely arranged and conducted college instruction in hygiene. In the wholesome fruits of the seeds that were sown in the colleges and universities are seen our sane state constitutions, our just laws, our sound educational institutions. Likewise, ideal public health activities in the future are in the largest measure going to be the fruitions of ideas sown in these required courses in hygiene and university health services.

COMMUNITY HEALTH CENTER, THE UNIVERSITY HEALTH SERVICE

The student who takes this scientific course in hygiene and public health will soon appreciate that 95 percent of future public health work is going to be concerned with the person, and that facilities must be provided for dealing with him. This will find expression in the Community Health Center. It is by no means visionary to state that the health center will be one of the most imposing of our public structures. At least it will be given the same housing consideration as is now given to schools and courts.

From the community health center will radiate all those activities concerned with the health of the community. It is here where the mothers will be taught the hazards of babyhood and the methods of salvage. School hygiene will emanate from and be closely related to this center. Even adults will gather for instruction in means and methods of promoting health and of preventing the defects and diseases that are prone to come on in middle life. This teaching must be concrete and well illustrated. Hence, nutritional, dental, tuberculosis, child welfare, mental and other clinics must be given from time to time at the community health center. Thus education of the masses in the theories and practices of

health promotion and disease prevention becomes the most important public health activity of the health center.

The health center will be our solution of social medicine. It must have in its employ physicians, laboratorians and nurses. Ample provisions must be made for physical examinations and physical records must be kept of the individuals making up the community. This is the bookkeeping of the community's health. Further, the health center must possess a dispensary where people with minor ills may come in for treatment. Hospital beds must be provided, both for the care of the general disorders and the isolation of sources of infection. Thus the health center will contribute much to the health efficiency, happiness and welfare of the community.

The sanitarian and laboratorian, with their equipment and facilities, will keep eternal vigilance over the water system, and the milk and food supply, and concern themselves with the environment wherever it is related to the health of the community—such as housing, recreation grounds, etc.

The University of Minnesota has established one of these health centers for its community of seven or eight thousand students. It is known as the Students' Health Service. During the school year 1919-20, the second year of its existence, more than 5,000 students had sought its services. Approximately 34,000 visits were made to the dispensary for physical examinations, medical consultation, advice or treatment. More than 1,400 cases were sent to bed and many of these were isolated because they were for the time being dangerous to the community.

These curative or treatment phases of medicine, however, are not the chief concerns of the students' health service. Its aim is to help each student entering the university to possess a healthy, vigorous, active and harmoniously developed body and to keep it at its best. It stands for positive health. It desires to be a most

potent factor in reducing to the very minimum that prodigious annual economic and academic loss in our universities due to lassitude, indisposition, illness and frequent epidemics among students. Therefore, it is as much concerned with the physical welfare of the sound student as it is with that of the ill or the subnormal. The promotion of health and the prevention of disease are its watchwords.

Education here, as in all public health activities, becomes the chief instrument of effort. In fact, the students' health service may be rightfully regarded as the laboratory of hygiene and public health teaching in the university. For it is here where the student actually sees and experiences the practical application of his instructions. The health service augments the student's class-room instruction in health by means of daily health bulletins, special lectures, exhibits, placards, posters, etc., and the distribution of timely literature.

We believe that the future community health centers will be patterned in a large measure after the university students' health service and that they will be the best solution of what is now discussed as social or state medicine. Therefore, a brief summary of the organization, scope and facilities of the university's health center or service may be of interest here. The various activities of a health service are closely related. They can, however, be divided into three subgroups: 1. Education; 2, Personal Attention; 3, Sanitation. The education phases have already been sufficiently discussed.

Personal Attention.—Each student entering the university for the first time is given a rigid physical examination. This is done before he is allowed to register. The values of these physical examinations are inestimable, both from the personal and community standpoint. One of the greatest values of this examination is not so much the detection of existing disease and defects as is the assurance to a large group who think they

have disease and are subnormal that they are really sound. Fanciful ailments and imaginary defects are the contribution of over-solicitous parents and harmful literature on the part of pseudoscientists and charlatans. Those who are subnormal are presented with an inventory of their defects and means are provided for the remedies. Students who bring tuberculosis and other communicable diseases are isolated and treated. The physical record of each student is kept for numerous future references.

The activities which come within this sub-group of personal attention are:

1. Physical examinations and bureau of records.
2. Provisions and activities for the maintenance of health of sound students. Here the health service coöperates with the departments of physical education, intramural sports, recreations, etc.
3. Vaccinations and inoculations against those diseases for which we have specific prophylactic treatment.
4. Reclamation and reconstruction of subnormals.
5. Hospital and dispensary for the treatment of ill students.
6. Isolation hospital for care and treatment of communicable diseases.

Sanitation.—This subdivision concerns itself with the student's environment, both on and off the campus. Rooming and boarding house regulations must be enforced and frequent inspections made. The sanitarian must be especially concerned with the drinking water, swimming pools, the milk and food supplies and the health conditions of those concerned with the preparation and serving of food.

Finally, the laboratory serves both the personal and sanitation subdivisions. It makes possible the early detection of communicable diseases and provides facilities for the routine analyses of specimens.

The University Health Service, as it

is now organized, serves two purposes. In the first place, it is directly concerned with its own community health problems. Secondly, it must be regarded as an educational measure of greatest importance. For it is here wherein the university is working out the problems of community medicine, call it what we may, health insurance, state or social medicine. No more far-reaching contribution can be made by the university than the solution of this intricate problem.

The training of public health workers and directors is going to be another concern of the university in the near future. Departments of hygiene and public health should be established wherever the resources and facilities will permit. The department should be concerned with giving that required instruction, already outlined, for all entering college students. Further, it should be concerned with the training of public health workers and directors. Even now the demands for trained men and women cannot be supplied. As the community health idea grows, the demands will increase. In fact, the opportunities for health workers in America will be second only to the teaching profession. The university must organize its resources so that this training will be supplied.

The supervision of health in our colleges and universities, to summarize, lies along the following important lines: Directly, in the education of all its incoming students regarding the fundamentals of health promotion and disease prevention and the establishment of a health center or service wherein the practices of community health may be put into effect. Indirectly, the supervision of health in our colleges and universities must re-act wholesomely on the nation at large through the influences the college student will have on his community in later life. Further, wherever it is feasible, the university and college should provide training for public health workers and through research and investigation add to our knowledge of health supervision.

SYMPOSIUM ON HEALTH SUPERVISION IN COLLEGES

III. STUDENTS' INFIRMARY, UNIVERSITY OF CALIFORNIA

Its Contribution to Student Health

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THE central idea of this institution is an insistence on individual health for the good of the many. It denies the privilege of any student through illness to constitute himself a menace and thereby deprive other students of the privileges of the university. The health of the student at the university is better protected than when he is at home.

The success of this movement was achieved by the unique combination of preventive and curative medicine. A compulsory course given by the Department of Hygiene in personal and public hygiene acquaints all students with the necessity for the control of infectious diseases, thereby eliminating, as far as possible, sickness as a cause of disability in university classes. Looking at it from an economic standpoint, one can readily see that the academic loss from poor class attendance would be materially minimized by such measures. With a dispensary and hospital service on the campus, the student is free to consult the staff for minor ailments and be treated before a more serious condition develops. With such an educational program, practically carried out in a university community, our students could not help carrying the message of preventive medicine to their own homes and communities, thereby constituting an educational measure which has an important influence on the development of public health.

To study the summaries for the year 1919-20 is to grasp the situation as to what is being done at this health center in the university. The number of students enrolled was 9,991 and out of this number 7,112 individuals, or 71 percent of the entire student body, received treat-

ment at the dispensary on an average of five times, during which 140 patients were treated daily. For those who required hospital care the number of days was 5,765, of which 968 patients had an average stay of 5.9 days. The largest number in any one day was 71 and the yearly average per day was 21.1. These hospital cases consisted principally of respiratory and other infectious diseases, surgical and general medical cases.

To those unacquainted, it would seem that the numbers quoted were unusually large, particularly in such a young adolescent group, but the fact is that a large majority of these consultations meant prevention of disease rather than delayed cures and increased mortality. This also demonstrates the fact that the average person necessarily requires medical supervision. Every student is taught that when any evidence of illness is observed, reporting to the infirmary is essential, not only for the early treatment of the ailment, but for the safeguarding of his fellow students from a possible disease. Should the patient have a temperature over 1° C., he is hospitalized and placed under observation. The observance of this rule has often prevented contacts by early isolation, even before the classic symptoms of communicable diseases have appeared, a measure of epidemiological importance.

A complete physical examination, far more exacting than the recent United States Army examination, is a requirement for admission to the university. These examinations frequently make possible the recognition and cure of conditions of ill health which the candidate has not hitherto known to exist. Often,

too, it relieves the groundless apprehensions of students who imagine there is something wrong with them, when in reality they are well. How can any sane individual argue against physical examination when the advantages are so numerous; including the recognition of early infections, the identification of missed cases and carriers, the finding of incipient disorders and the disclosure of congenital and postural defects? For the most part, less than $\frac{1}{2}$ of 1 percent of applicants have been denied registration. These were advanced cases of tuberculosis and mental disorders. These physical findings are carefully noted and the record is utilized should the student subsequently seek dispensary advice.

Much of the data is used by the Physical Education Department which carefully selects from these records items that concern the welfare of their students as, for example, heart conditions and correctable postural defects. The same physical examination is used for the R. O. T. C. candidates and for the Military Department.

It is of interest to note in comparing our present records of defects observed by making careful physical examinations, with the same data of five years ago, the marked difference and improvement which prevails. There are 50 percent less eye refractions to be performed, *otitis media* cases are fewer, and there are better and more tonsillectomized throats than formerly. So on the whole, the college entrant now is in better physical condition, due to the efficacy of medical supervision in our secondary schools.

The University of California desires to keep its students well; it believes in preventive medicine. The Regents require compulsory cowpox vaccination and no one is excused who does not possess a satisfactory scar which is accepted as evidence of his immunity. It is of interest to know that the number of students last year who required vaccination were 816 out of 3,258 new en-

trants. The State Board of Health, in a recent article, finds only 20 percent of California school children vaccinated and Dr. Force of the University of California has shown that in 1919 smallpox in California has increased in this group eight-fold.

Compulsory vaccination was adopted 14 years ago at the University Infirmary, and not a case of smallpox has been recorded in the infirmary statistics. The method employed by Force is a modified Von Pirquet. This method of vaccination was adopted by the Surgeon-General during the war. Notwithstanding the Appellate Court decision and the enviable record the university possesses, the "Anti-Vaccination League" has an initiative measure* (No. 6) to be voted on at the coming election. It provides that vaccination shall not be made a condition for entrance to schools and colleges of the state.

The staff of clinicians at our infirmary is composed of specialists in several fields of medicine. This makes possible the practice of group medicine. Each specialist has an interest in preventive medicine, and in the correction of defects. Modern public health measures are a matter of routine practice, to which members of our staff conform. For example: All throat cases examined are cultured and if positive for diphtheria the contacts are "Schicked" and the non-immunes immunized. In measles, and acute respiratory infections, the patients are isolated and their throats cultured for *Streptococcus hemolyticus*. All positive cases are isolated, as it is known that these *Streptococcus hemolyticus* carriers are a menace to others. Students with an infectious or contagious skin disease are prohibited from using the gymnasium and swimming pools. Blood, sputum, fetal, and urinary examinations are made regularly when indicated, in all house and dispensary patients. In venereal cases Niesser infections are not dis-

*This initiative was defeated by a decisive popular vote.

charged cured until the prostatic secretion is negative for pus cells and gonococci. All luetics are given the benefit of frequent Wassermann tests. Infected tonsils, adenoids and correctable defects are operated upon. Constant observation minimized the incidence of focal infection. Focal infections are frequently the sole etiological factor in arthritis, endocarditis, nephritis, etc. Because of the importance of teeth as foci of infection, dental care was instituted six years ago and a prophylactic dental service is conducted here by two dental surgeons.

Among students treated at the Infirmary there have been only seven deaths over a period of 14 years. These statistics do not include the victims of the influenza epidemic. During the war the toll exacted among the S. A. T. C. was 13 soldiers and four nurses out of 1,400 cases treated by the United States army and university staff.

The foresight of the University of California in prescribing a compulsory course in Hygiene for all new entrants, made it possible to control communicable diseases on the campus. This course is given by the Professor of Hygiene, who is also University Physician, which makes it possible for him to present the medical as well as the public health aspect of the subject. Only too often hygiene in other colleges is linked up with physical education which limits itself to bodily development, recreational activities and corrective functional postural defects. Physical education alone does not take into account the processes of immunity in disease. Body resistance and physical development are not synonymous. The organized Infirmary system makes for great alertness in the detection of contagion; its facilities for bacteriological and clinical examinations, the use of immunity measures, and the hospitalization of communicable diseases by the practice of medical asepsis, according to the principles advocated by Chapin, together with the educational influences, combine to produce a public

health program which protects our student body from infectious diseases. Missed cases and carriers are more readily detected, isolated and treated under such a system.

Educators and university medical officers have from time to time made inquiries as to the prevalence of venereal disease among college students. The incidence of these venereal diseases has been reduced within the student body due, undoubtedly, to the teaching of hygiene, self-control, physical education and to prohibition, all these tending to higher moral attainment. Only 11 cases, or practically 1/10 of 1 percent were reported for the year 1919-20. While it is true that prophylaxis is admitted to be the public health measure in the prevention of venereal disease, yet advocating the same is considered as countenancing license to immoral behavior. The subject of prophylaxis should be presented by quoting to the college students the results accomplished by the army authorities during the war. It is of interest to know that as all these cases gave history of contact, yet 40 percent were non-specific urethritis, as determined by smears and cultural methods.

Personal hygiene, as it is theoretically taught by the Department of Hygiene and practically applied in our gymnasium and military department, is of inestimable value to our students. Physical education not only develops and promotes bodily functions, but it bestows educational, moral and spiritual advantages. The well-exercised man, trained to perform all the agility tests, is more likely to become a lover of true sport; he plays the game fair in life, and is less tempted to immorality. With the saloon and the commercialized red light districts abolished, the way is paved for a victory over social evils, for recreational activities must be developed by municipalities and educational institutions for the benefit of American youth. Play is a public health agency and the enemy of viciousness.

In our university, where a properly equipped dispensary and hospital is maintained, splendid opportunities are offered to study and observe among groups of intelligent persons, problems that are of immense importance to medicine and public health research. Blood pressure studies will, in the near future, be published by Alvarez. Recently an article was published by Kofoid and Swezy upon the incidence of carriers of amebic dysentery among students formerly with the American Expeditionary Forces of the United States Army.

McVey in his comprehensive studies on the treatment of chronic amebic dysentery cyst carriers has contributed valuable knowledge to the science of therapeutics.

By the application of public health measures with the practice of scientific medicine it has afforded in an academic community excellent opportunities for research and a promising field for the study of socialized medicine.

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SYMPOSIUM ON HEALTH SUPERVISION IN COLLEGES

IV. DEPARTMENT OF HYGIENE AND PUBLIC HEALTH AT THE UNIVERSITY OF KENTUCKY

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TOO long have the heads of our colleges and universities considered education as solely that of forcing facts and ideas into the minds of boys and girls. With this done, they have assumed an air of complaisance and satisfaction in their accomplishment. Little concern has been felt as long as their charges have been able to get out of bed, take three meals a day and attend classes. No responsibility has been felt for those whose general efficiency is lowered one-third or one-half by ignorance of the laws of proper living. Absence from class has been considered inevitable and accepted accordingly.

We are beginning to wake up to the fact that an educational system that considers the care of the mind only is not complete; that this often means an in-

ability in after life to utilize fully the limited equipment received in college. A new meaning to education is coming to the more far-seeing educators and this is in the form of some appreciation of the value of physical education. As yet, this appreciation is but slight on the part of the great majority of educators. They have little knowledge as to what physical education is and what its aims are. Many believe that a student who works all day on his feet in a closed machine shop manipulating machinery is doing that which is equivalent to class work in the gymnasium which, of course, is absurd.

The various colleges of arts and sciences require a minimum of 120 hours of mental education for graduation, yet they begrudge four to six hours added to or taken from this 120 for graduation, for

education of the body. These educators forget that Greece, during her period of greatest efficiency, required more than one-half of the time of the school boy and girl for the education of the body.

It is very encouraging to note that our most progressive educational institutions are now making provision in their budgets for departments of hygiene. It will not be long before parents will refuse to send their boys and girls to institutions which do not make adequate provision for their training in health habits and for meeting all their health emergencies.

The institutions of the South have been more backward, perhaps, than institutions elsewhere in this matter. Through the help of the Interdepartmental Social Hygiene Board at Washington, many institutions have been made able to establish departments of hygiene. This plan has thus been made possible at the University of Kentucky. Prior to the organization of the Department of Hygiene and Public Health last September, medical aid of only a very casual nature had been available for the students.

The personnel of the new Department of Hygiene consists of the director, whose duties are those of organization, teaching hygiene, writing and conducting the state extension work in hygiene and physical education; the resident physician for men, whose duties are those of making physical examinations and giving medical attention to the men students; the resident physician for women, whose duties for the women students are similar to those for the men; the resident nurse, who attends to the girls in the dormitories and assists the resident physicians in their dispensary work, and the secretary, who attends to the clerical work of the department.

Beginning with next year, all students in the College of Arts and Sciences will be required to take a course in general hygiene, two periods a week for one year, for which regular academic credit will be given. This may be taken any time

after the freshman year. All freshmen of the College of Arts and Sciences will be required to take six or eight special lectures in such fundamental principles of hygiene as will be necessary for proper adjustment to their new environment.

The students of the Engineering College will be required to take general hygiene once a week during the freshman year for credit. A similar requirement will be made of the students of the Law and Agricultural Colleges. This work will consist of lectures, textbook assignments and the writing of papers upon special topics.

A special course in School Hygiene, two hours a week during the first semester, and a course in the principles of Physical Education, two hours a week during the second semester, will be required of all students planning to teach. These courses will be elective for others.

A course in First Aid and Emergencies will be offered as an elective, two hours a week for one semester, with separate sections for men and women, to be repeated the second semester.

A course in Home Nursing will be offered as an elective, one hour a week for one semester, to be repeated the second semester.

The course in the Theory of Physical Education will be supplemented by a course in practical work given by the Department of Physical Education.

A dispensary is maintained on the campus in charge of the resident physicians and nurse. The dispensary is open all day for the convenience of the students and faculty. Medicines and drugs have been dispensed free of charge. A small fee will be charged each student next year in order to help pay expenses. As the work of the Department is chiefly preventive, the resident physicians cannot assume the responsibility of caring for cases of serious illness upon the campus or elsewhere. Such cases will be referred to local physicians. In response to a letter from the Department most of these physicians have gladly con-

sented to treat students and charge them according to their means to pay, providing the Department sends a statement with reference to financial ability. The dentists have also offered similar service.

A small infirmary has been established in each of the girls' dormitories. These will be in charge of the resident nurse.

Medical examinations have been made of every student in the university. An effort will be made to have another made at the end of school. The time taken for each examination is from 20 to 40 minutes. Special records are made of the findings at the examination. A card is sent to the parents stating the results, with a request to have existing defects remedied. A duplicate card is given to the student himself. With the card sent to the parents is enclosed a general letter stating the aims of the Department in its relation to the welfare of their boys and girls. Students with defects are required to report at the clinic periodically as a follow-up measure. In case of defects that cannot be corrected at the clinic, the student is sent to the local physician of his choice with a card signed by the resident physician stating his financial circumstances, etc., when this physician is

one who has agreed to treat such students according to their means to pay.

The Department of Hygiene and Public Health is attempting to extend its work beyond the campus through the agency of the Department of University Extension. An extension center has been established at Frankfort, the capital of the state, and two others are about to be established elsewhere. At Frankfort all the city teachers will be required to meet once a week for a two-hour period of instruction in Hygiene and Physical Education. Here the expenses will be paid by the city School Board. Two correspondence courses in Hygiene and the Principles of Physical Education are offered, one for high school and one for college credit.

An article upon some interesting phase of health education is prepared each week and sent to the leading daily and weekly newspapers of the state. A series of engagements has been arranged for presenting health subjects at the various women's clubs over the state. The department is working in close connection with the state director of hygiene and physical education and the secretary of the state board of health.



Health Education as an Economic Procedure in South Africa.—At Johannesburg, the local insurance companies have taken up the question of public benefit, and the Rand Mutual Assurance Company has deemed the public health education of the miners to be a business asset. A little pamphlet, "Your Health and How to Keep It," embellished with striking electrotypes from American sources, presents a series of health talks by A. J. Orenstein, M. D., Superintendent of Sanitation of the Rand mines. This volume is the more interesting since it was into this section that Surgeon General Gorgas was invited to go in order

to discuss general sanitation with the authorities. Dr. Orenstein's book follows quite closely the American models, and intersperses advertisements liberally with the text. It discusses general diseases, describes immunity, shows the danger of the house fly and the common towel, speaks of some special mine ailments, decries patent medicines, emphasizes care of the teeth, presents reasons for safety first and carefulness, suggests healthful practices in food and water to drink, dwells for a moment on the benefit of sunshine and of exercise, and in a little book of 60-odd pages outlines a very sensible short course for health education.

SYMPOSIUM ON HEALTH SUPERVISION IN COLLEGES

V. MENTAL HYGIENE AND THE COLLEGE STUDENT

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Read before the American Students Health Association, Chicago, December 31, 1921.

PHYSICAL health cannot be an end in itself. We would seem to lose sight of this at times although we tacitly admit it at all times in our failure to esteem highly those about us whose only claim to distinction is an exceptional physical prowess. Physical health can only be a means to an end. Longevity can scarcely be that end, for longevity of itself can be of no importance—it is the quality of a life that counts. The end we all probably have in mind as the chief justification of our work is that in increasing health we are making possible an increase of individual happiness and efficiency; and by efficiency we no doubt mean not merely economic or industrial efficiency, but ability in meeting personal problems of whatever nature. But happiness and efficiency are but partially dependent upon physical health. Of all the unhappiness that you and I may have had during the year that is now just closing, how precious few of them have found their source in ill health! How many of our failures and inefficiencies, little and great, can we honestly say were due in any large part to poor physical condition? Or how much happier do you conceive we would have been, or how much more efficient, had our physical health been tenfold better?

I do not, of course, minimize the importance of physical health. Had serious epidemics been abroad in the land, or had our physical health, because of ignorance or indifference or carelessness, been not what it was, our unhappiness during the past year would have been increased many times and our efficiency greatly lessened. I would merely point out that if our goal in public health work is essentially to increase human happiness and efficiency in a positive way, we are likely

to miss that goal if we act upon the belief that it is to be attained through physical agencies alone and continue to ignore the fact that happiness and efficiency are essentially dependent upon mental factors.

Colleges and universities have been slow to recognize in any practical way the importance of physical hygiene, although the fact that this meeting is possible is evidence that faculties are beginning to see that it may be worth while to look after the health of students while these students are yet well. It is extraordinary, however, that universities whose function it is to work with the minds of students should still attend so little to the mental health of those students, although reasons for this neglect may not, after all, be so difficult to find.

If some have felt that happiness was dependent upon physical health there have been others who have felt that happiness was dependent upon intellectual development. Educational systems have been built largely upon this assumption—train the intellect and school the will that they may rule over the “baser animal parts.” It is upon this that schools and universities have been engaged. Intellects have been trained in great number and the result in increase of knowledge has been very large. A child in the grade school of today has more information than had Aristotle. But with it all we find ourselves little nearer the goal. Much as it may injure our self-esteem to admit it, we are forced to doubt that happiness and efficiency are rooted in intellect. It fills us with pride to think that our lives are controlled and directed by the forces of our intellects—thus as human are we different from the animals. Unlike the animals, when faced with a

difficult problem, we gather together our bits of information and apply cold reason to the formation of our judgment. Although each of us occasionally may wish we had a little more "brains" to apply in making a judgment, we are quite sure that it is the "brains" (intellect) we have that are applied. But we largely fool ourselves. If we will ground our pride, I think we will find that all too often our decisions are quite largely made before our intellects come very fully into play and that our intellectual processes perform the function largely of finding reasons to justify the already made decision. In other words, our decision has been made upon an emotional basis rather than upon an intellectual one; the control and direction of our lives lies here, and what we each need is not alone more "brains" but a larger conscious control of what "brains" we have. If intellect controlled our destinies, most of the great problems of the day could be very soon settled; but, as we know all too well, intellect, in its relation to these problems, is largely used for balancing, countering, and compromising conflicting emotions. We know, also, quite well that this is equally true in the problems of our individual lives. The application of the "dry light of reason" alone would soon resolve most of our problems, but this dry light has a limited opportunity, for few, if any, of the fundamental and controlling interests of our lives and the problems that arise from them are alone intellectual.

There are other reasons why universities have been indifferent to the mental health of their students. Mental ill health has meant to them mental deficiency (feeble-mindedness) or mental disease (insanity), and of the former there is none to be found in universities and of the latter only an occasional case. Mental hygiene, therefore, cannot be an important problem for them. This, however, is a misconception. Mental hygiene as a movement has had to concern itself very largely with the problem of the care and

treatment of the great body of helpless sufferers ill of frank mental disease and with the social and economic problems that develop about them; but mental hygiene as a department of medicine is vastly more concerned with the mental health, the happiness and efficiency of the average normal person, of you and of me, of our wives and our children and our neighbors.

Then, too, mental hygiene seems a vague and intangible thing. It is still surrounded in the minds of many with superstition and mystery. A cat may look at a king and we no longer call it *lese majesty*; we may admit a belief in the science of modern biology and not be termed sacrilegious. Both terms have largely lost their force today, but the noisomeness and fearfulness that once surrounded them have not gone out of the world, and if we refuse a worshipful attitude towards intellect and turn our attention towards emotions, while the once fearful words will not be applied, much that once went to make those words fearful is likely to settle about. Men fear most, of course, what they know least about. We may feel safe in speaking of intellect—moral connotations have been stripped away; we may even glow with pride in speaking of will—the will has always been a moral agent; but the emotions have always been a "poor relation," and not only a "poor relation," but a "poor relation" that has done time in the workhouse, whose ancestors were all bad. Men in his line have been hung for murder, and it is reported that they have not always had a proper attitude towards women. He is animal-like and low, and, if we cannot deny him, we can make a pretense of ignoring him. This will at least help us to differentiate ourselves from his line.

Except for contagious diseases, the lack of helpful information is probably no greater in the field of mental and nervous disease than it is in any other field of medicine; and ignorance, as an excuse for fear, is no more justified here than

elsewhere. Let us for a moment look into the situation of the college student to see, first, if the problem of ill health is one that we need be concerned about, and, second, if there exists a body of knowledge that may be of help. Let us review some of the immediate problems with which the college student finds himself, the tools he has at hand with which to meet these problems, the solutions he is likely to discover using such tools, and the possible consequences of those solutions.

Decisions for the first time rest with him. He has been quite ready to make decisions for some time and has frequently been piqued that more liberty has not been given him in this regard. Decisions, he figures, are easy to make. One needs merely to know exactly what one wants and to move directly towards it. There will be slight distractions, to be sure, but with a clear purpose and a will to succeed, there should be no real difficulty. One must distinguish sharply between right and wrong. The counsel one has received in one's youth need not, to be sure, be the final word, for times change. In the newer situations one must use one's own judgment, but there are certain fundamental principles that should be adhered to. These principles are largely axiomatic, are world-old, and, therefore, are to be depended upon. One should be honest with one's self and with others. This should really not be very difficult. One should be sure of one's motives. One must credit others with equally good motives. It is probably true that there are people who are not honorable, who cannot be wholly trusted; but the number is probably not nearly so large as has been supposed, particularly among educated people. If one is fair and straightforward, others will be equally fair and straightforward. One should be frank, friendly, and generous. And one must be open-minded. One must not be easily discouraged. There are bound to be periods of dis-

couragement and failure, of course, but one can always learn from one's failures and make them stepping-stones to better things. The thing will be to find out just why one has failed and see to it that it doesn't happen again. Thus courageously, if naïvely, the student starts out to add to his store of knowledge, and, in all good faith, to prepare himself to make the world a "better place because he has lived in it."

Somewhat to his surprise he soon finds that he is not called upon to meet the larger issues he was prepared for. There seem to be no moral dragons to slay. It is all so much simpler than he expected. As he had rather suspected, his friends at home have been over-sollicitous; but that, of course, is natural, for it is impossible for them to know what college life is today, and they have never fully understood him or had the confidence in him he has deserved. One wishes one might be tested a bit more, that more important issues might be at stake. The problems one meets are petty and unimportant, merely troublesome, such as the distribution of one's time. How much should one "bone"? There is, of course, more to college than just books. One should mingle with one's fellows; one must have recreation; and one should be interested in athletics, even if one does not take part. One should be a supporter of all that is best in college life. How soon should one begin to specialize? Is one justified in giving more time to a subject in which one is particularly interested and for which one has a bent—as, for example, literature—or should one school one's self by forcing one's self to give time to a subject for which one does not seem particularly adapted, as, for example, mathematics?

Is it really dishonest to falsify slightly one's monthly account home? If a true account is given, it is likely to make the folks at home a bit unhappy; but when things are really all right, is one justified in causing this unhappiness, when it is

due not to the situation but to a misunderstanding of the situation?

There are so many odds and ends of things hanging about undone. How does he happen to forget these things? How did they get done at home? He cannot remember that he was even very much aware of them before. None of them is important, but collectively they are annoying and troublesome. One should have system and organization, but all his systems seem to get too complicated and his organization is always being upset by extraneous circumstances.

Without knowing it, he misses affectionate attention and, restless, goes about looking for something he cannot find. He finds himself but one in a crowd and there arise the problems of mingling with the crowd, of losing one's identity in order to find it; the problem of making and keeping friends; adapting himself to fraternity or other group relationships. Gradually philosophical doubts or social and economic doubts begin to assail him and he finds himself afloat on a sea of troubles. Anxious and concerned, he throws out anchors of axiomatic truths that had been forged for him, but they drag or snap. If he does not lose entirely and from thence on float about a dangerous derelict, he will likely find eventually quieter waters, but with the marks of his combat deep upon him. Permeating the entire situation, there will be not one but several sex problems to bother him.

As the student in the midst of his new complexities begins to take account of himself, what does he find? Although he has always been rather pleased with his self-assurance and ability to meet and mingle with others, he may find himself surprisingly awkward and embarrassed in the crowd. He has always enjoyed the society of others, has been, in fact, more or less of a leader at home; but now he finds himself filled with a strange self-consciousness and an embarrassment in trying to express himself. In fact, he does not express himself, not his real

self. His new acquaintances, he is sure, are getting quite a wrong impression of him. They think he is inclined to be fresh when he has no desire to be fresh; or they think his ideas and opinions are unimportant when he knows they have value. He is sure he is better than a good many of those about him, but some seem to be getting the idea that he need not be considered. He is sure they are not getting his true measure. He is surprised at a lack of facility for making friends. He does not wish to be a hail fellow well met, but he would give a good deal to be able to learn to know people as readily as some of the others do. He knows he is capable of very deep friendship. He has a high ideal of friendship—nothing is more real than a true friend; there is nothing he would not do for a friend. But no one seems particularly interested in having him for a friend. How does one go about making friends? He is very much attracted to people who seem quite indifferent to him. When he joined the fraternity (or when, with a group, he decided to stay out), he thought this problem was solved, for he never liked a group of fellows more, particularly the older men—was there ever such a fine lot? And to be not only a friend but a brother to these men! But now, as things have settled down for the year, they do not seem to pay much attention to him. In fact, some have been quite disagreeable. He does not seem to fit in.

He has an opportunity to compare himself with others, such as he has never had before, and the comparison is not always in his favor. In his former small group he may have shone as an unusually good student; or he may have had facility for some particular subject, so that he excelled. Here he finds that there is nothing exceptional about him at all. In fact, most of the students in his classes have as good minds as he, and many far outclass him. Indeed his ability seems quite ordinary. He no longer takes pride in any special facility—there are quite too many who are far cleverer than

he, in what he thought was his own field. From this and from other comparisons, he becomes aware of what he believes to be an inferiority. This may be increased in the gymnasium, where he may find that his physical development does not compare well with that of others—he was not aware of this before; he had considered himself as sturdy and as well-developed as the average fellow. But this reminds him of some habits of his and he recalls how upon starting this new life among men he was going to be through with those habits. It would somehow be easier; in fact, it would be quite easy. But he hasn't changed; he is just as rotten as he ever was. No wonder he looks like a wart besides these fellows. How disgusted they would be if they really knew! Of course, manly chaps like these have never had such habits. They are men of strong will. He is different and really hasn't any right to be around them.

But if he finds himself inferior, he is generous enough to be glad that there are real men in the world—men of brains, men of integrity and men of strong will. He finds them about him. He places them upon pedestals, glories in them unselfishly, and in his humble ways tries to be worthy of them. And all too soon he finds his heroes have hideous feet of clay. In the classroom he may find both intellectual and emotional stimulus. Warmed by the enthusiastic discussion of a professor in classroom, he seeks him out in the quiet of his study, for he has seen a light and must know more of this. What he expects to find he himself probably does not know, but vaguely there is a feeling that professors who glow in the classroom glow at all times. He finds the professor more or less just human and probably a bit bored. In his shock and disappointment, he puts him down as considerable of a faker; as an actor who has no real interest in his subject, but who for classroom effect screws himself into an emotional enthusiasm he does not feel.

He finds himself strangely moody at

times. Neither especially happy nor sad, but stirred by a vague discontent and restlessness. Spice and zest seem to have gone out of things. He is indisposed—he is probably just lazy, he thinks. Or things may take quite another turn and instead of vagueness there may be unaccountable floods of emotion that pass over him and puzzle him. But whether the puzzlement is from one source or another, he finds his attention distracted and work becoming more and more difficult.

He is distressed by a strange new attitude he finds developing towards his family. He has come to the time when emancipation from the family, the breaking of bonds that hitherto have held and limited him, is necessary. But he does not know this except vaguely. He knows that the family bothers him; he wishes they would let him alone. They mean well, but they do not understand either him or his problems. In fact, they never have. What are relatives anyway? After all, why should one "love" one's parents? One's parents are a fortuitous circumstance. One has a right to one's own individuality, and the development of individuality may demand getting rid of all fortuitous baggage and assembling about one's self those things and those people who best express or best call out the larger things in one's personality. At any rate, "love" and "affection" cannot be commanded. If he doesn't "love" them, he doesn't "love" them, and that is the end of it. It cannot be helped.

This new attitude shows itself, although it remains unexpressed, in many ways to those at home. The situation is likely misunderstood, and the boy begins to receive letters of complaint and upbraiding for his neglect of home, for his infrequent and unsatisfactory letters; father writes and says that the boy is making mother very unhappy.

In boisterousness and a bit of rioting, perhaps, the boy covers his feelings, but he is exceedingly unhappy. Books are neglected, for in the solitude of his room

his thoughts gnaw at him. Extravagant diversions give him relief. Is he really a rotter, he wonders. He recalls now with some satisfaction what at the time he refused to admit, that earlier in the year he was a bit homesick. He ought to feel sorry that he has hurt his mother and in a way he does and in a way he doesn't. Is he becoming incapable of affection? He hates silly sentiment, but is he capable of nothing more? At least, he might be loyal to those who have been loyal to him. He might pretend an affection; but that would be grossly dishonest and dishonorable. But is anything more rottenly dishonorable than not to feel a sense of obligation to those to whom one is really obligated? It's all a confused mess. Through misunderstanding and consequent bad handling of the situation at home and through the growing strength of the boy's own biologic urge for independence, the breach grows. Although a fairly satisfactory compromise will likely be found eventually, the boy will gain his first steps in emancipation at a price in unhappiness, loss of time and efficiency that should not have been paid.

From the many emotional problems with which adolescence is faced in any place, but more particularly in college—the losing and finding of one's self in the crowd, the making of friends, the comparisons, physical, intellectual, social, that are forced upon one, the assimilation of new knowledge and points of view, the deciding of courses and principles of actions—I have selected a few. I may not have been happy in my selection, but I have tried to choose the most simple ones, those that are quite upon the surface and in more or less full consciousness, and have been careful to avoid the more complicated problems that lie essentially in the unconscious field, even though these are more significant and more important in their consequences. I have much oversimplified the account, but let us see where even this very simple and obvious account leads us. Have these rather

commonplace stresses and strains any significance?

You will probably say not. There is nothing unusual about these experiences. They are more or less the experiences of every student. It is these things that make the man out of the boy; there is probably nothing more valuable in the whole of the boy's college life. We have all been through it. None of us has experienced any particular harm from it, and we can now even look back with considerable amusement at the turbulence of those days.

A boy becomes a man by the mere physical process of living a certain number of years. The quality of his manhood and his effectiveness, however, is quite another thing. If you still believe that all children must have measles and that the sooner they have them the better, then you will see only good in this process. If you believe there may be serious after effects of measles that it is well to avoid, then you may be willing to consider possible after effects in some of these situations. Or, if you are one of those who believe that the best way to teach a boy to swim is to throw him unassisted into water over his head, you will thoroughly approve the present method of letting the boy sink or swim in another situation.

There is not one of us but has his psychic scars of this period. There is probably not one of us but would like to be more efficient, more forceful; would like to see his problems more clearly; to make his work more sharp-cut and direct; to keep to his plan with less distraction; to maintain a better perspective; to gain a closer coöperation with others; to be more successful in presenting his point of view to colleagues; to win greater confidence; to have a larger faith in his own integrity. All sorts of reasons we assign for our failures and mostly they are intellectual. When it comes down to it, we simply haven't the brains. It does not seem to occur to us that we may

not have the full use of the brains we have. I question if it is the quantity or quality of our intellects that hinders us. I am inclined to think it is our emotions we stumble over, our prejudices, our antagonisms, our strong likes and dislikes that pitch us into judgments that we must later find reasons for defending; our habits of thought and stereotyped methods of reacting; our undercurrent of cynicism, perhaps, (in spite of the fact that we thoroughly dislike cynicism), or our too constant and ill-founded optimism, or our false pessimism (false, because we do not intend to be pessimistic, and yet we seem to react pessimistically before we know it); our too great placidity, perhaps, or our touchy irritability; our surprising intolerance, when we pride ourselves on breadth of view; our astonishing lack of generosity, when we wish to be generous; our disconcerting tendency towards disingenuousness, when we wish to be frank; the little intellectual dishonesties we slip into almost unaware, when we believe such things beneath contempt. And yet we are reasonably successful men. No one, and least of all do we ourselves, feel that there is anything mentally wrong with us. The difference, however, between ourselves and our less successful colleagues or between ourselves and those for whose failures we erect hospitals is a difference of degree.

It is not possible here to describe in any completeness the various ways in which the college student may react to his unusually stimulating environment or to trace to their source the various mental habits, helpful and otherwise, he is likely to acquire in his unaided effort to understand both himself and his environment and to find some sort of acceptable compromise between them, but we may select a few for discussion, again the more simple and obvious, and from them judge somewhat of the significance of the whole.

What way he will take depends, of course, upon a good many circumstances

—very much upon the mental habits he has formed earlier, somewhat upon his native ability or the congenital quality of his nervous system, to a certain extent upon his physical health and the acuity of his intellect. None of these things, however, even at best, will give more than an added buoyancy to his craft. None is more than an assurance.

He may find his way out quite successfully. He may develop a faculty for analysing situations with an almost uncanny skill. He may learn to meet his problems frankly, and to find a direct way through them. He may be so fortunate as to find some wise person who will help him. But even if this be not so, he may come through even as you and I—sufficiently well to deceive the world most of the time and ourselves at least part of the time and to win a not uncreditable amount of success in productiveness, efficiency, and helpfulness—but with our distinct handicaps.

He may fail entirely. The confident youth of October may by January be a quite disconsolate youth. He is full of worries (a symptom, not a disease); his sleep is badly disturbed; his appetite is gone; he is unable to study, he knows he is going to fail. This adds to the worries, and the vicious circle is confirmed. He has distressing headaches; his eyes bother him; food nauseates him; or he has cramps and diarrhoea or he is constipated; he feels weak all over; it is almost impossible to get up in the morning and, when once up, it takes a mighty effort to get himself about. He likely has his own idea of what is the matter—he has ruined himself with his disgusting habits; the very habits he has been “warned” against. This is not a thing he can see a physician about. He may pack up and go home a self-confessed failure. He may struggle on until the faculty sends him home at the end of the semester. He may consult a physician who, finding nothing wrong with his eyes or his stomach, may dismiss him. If he confides

in the physician his own fears he may find help and assurance if the physician is one who has come to conceive all anatomical parts as equally human; while he may have his worse fears confirmed if the physician is one who is still able to distinguish in man's anatomy both human and animal parts.*

From every university and college there drop out as failures each year a considerable number of young men and young women. The faculty have felt assured that they have not had the intellectual ability to get on and have asked them to go. A sense of failure is thereby added to their already exaggerated feeling of inferiority, and they enter upon their way in the world with a handicap from which they may never succeed in freeing themselves. It is not to be doubted that students do occasionally get into college who are not sufficiently equipped intellectually for college tasks; but a proper investigation will show beyond any question that in a very large ratio of cases the intellectual ability has been quite sufficient, but that enmeshed in a complex trap of emotions, from which in many instances they might quite easily have been extricated, these students have been unable to utilize what intellect they had. The university, with its interest narrowly focused upon the intellect instead of upon the mind as a whole, has seen the failure but has not been interested in carefully investigating the cause or in protecting against it. It would be just as reasonable to neglect a student who had broken his leg and when gangrene had set in, to expell him for not attending his classes. But the boy with a broken leg is not neglected; every possible skilled attention is given him, for the university can see that the broken leg is no reflection upon

the boy's intellect,—the intellect will still be worth training after the bones are knit. But the boy who is wrestling with a crisis in his emotions is left to struggle alone, although the consequences may be far more serious, and, when his difficulties have got the best of him, is cast out as unfit. If faculties were composed of those who believe that broken legs and appendicitis are "errors," it would be reasonable of them to demand that the boy with a broken leg correct his "error" and attend his classrooms, or depart. But, although broken legs are tangible, concrete things in the view of faculties and to call them "errors" is ridiculous, these same faculties would seem to see no absurdity in considering emotional difficulties "errors."

A larger number of students than is supposed develop as a result of their experience and its neglect frank mental disease (insanities); others stumble out of the schools only to be picked up and tended a few years later. A very much larger number develop crippling and incapacitating neuroses. Scattered between the two extremes, however, those who successfully find their way through and those who develop frank illness, comes the large body of students, each with his own particular warp. Some are very considerably warped and will recruit the world's supply of college-graduate failures and mediocrities. We may review briefly this group in the making.

In any college group there will be found those who are beginning to edge away from the crowd. This edging away should not be confused with a later adult desire to simplify one's life, to get away from the distractions of manifold duties, the "continuousness of discontinuities," where one can think and plan in peace and quiet. The adolescent group of which I speak withdraws not deliberately in order to think and to solve problems, but instinctively, perhaps, we may say, in order to avoid pain. It is the beginning of a withering-up process as

*I have emphasized here the problem of masturbation, because it is so frequently a source of difficulty; but it is to be remembered that even in those cases where it seems to play the major role, it is not the complete account; although an important element, it is but one of a number of elements in the situation; at best masturbation is but a symptom. Neither is it safe, in cases such as that outlined above, to jump to the conclusion that masturbation is an essential element.

of a plant too long in the direct heat of the sun and leads to various degrees of incapacity, from the *dementia præcox* patient in the hospital, content with his own autistic thinking, to the ineffectual day-dreamer on the outside. Up to now, the student has healthfully been putting out pseudopods, as it were, feeling out and absorbing from his environment; but he begins to find his environment too complex. In whatever direction he pours out a pseudopod, he finds not food but nettles; reality has become too painful; pseudopods become less frequent; he begins to roll up in a ball and to find contentment in a world of his own construction; the less that world is checked with reality, the greater the contentment.

Others, to the same general situation, react a bit differently. Day-dreaming and fantasy-building fill up their lives. Not the day-dreams that are inspirational means to ends more real than reality, the dreams that make the world go round, but dreams that are an end in themselves for they are hitched to no dynamo. These students glow with fine emotions and are frequently the joy of the instructor, because of their quick appreciation of the finer sentiments and ideals he is trying to express. Later he records these students as "disappointments" but with no sense, probably, of personal or university responsibility, or of opportunity neglected, of succor withheld because the need was unrecognized. To him, in all likelihood, the matter is an unfathomable matter of fate, much as he may still consider infant mortality. "The Lord giveth and the Lord taketh away. Blessed be the name of the Lord."

If a keen sense of reality and the habit of constantly correcting one's thinking by reference to reality is necessary in the development of the steadfastness and clearness essential to mental health, so, too, is intelligent honesty; and yet in any college group may be seen the development of contrary habits. An easy expedient in meeting a disagreeable situation, for example, an unattainable de-

sire, is to deny the desire and to minimize the value of the thing wished for. The wish is genuine, nevertheless, and assuming a false attitude merely makes it much harder to meet any later situation in which the wish comes and should be realized.

Emotional difficulties may be met by rationalizing them, a process whereby one succeeds (only partially) in deceiving one's self, although quite frequently others, by assigning for a course of action a reason that is not the real reason, which would be disagreeable and painful, but a reason that is plausible and much more satisfying to one's self-esteem. "I did not apply for a commission in the Medical Corps during the war because I could not be spared from my own community." A true reason in many cases; a rationalization in others. Not meeting the situation does not resolve the mental conflict involved in the situation and this lives to assert itself in many undesirable ways.

There is probably no snare of greater importance to the student than that involved in the development of a feeling of inferiority, for the injuries received here will likely remain with him for the rest of his life. The sources of this feeling are many and cannot be entered into here, but in any adolescent group the infected can be found. There are many types, but probably two of the most common may be discussed. The one is quite obvious; the other more deceptive. The one shows quite clearly by his demeanor that for some reason, quite likely a false one, he has found himself inferior and is accepting his lot. To the puzzlement of his associates he may occasionally burst out in a show of strength, usually at an inopportune time and over unimportant matters, but this only leaves him more defeated and humiliated. Or, he may find relief in coming to consider himself "different," of a finer and more sensitive quality than his fellows, to make capital out of idiosyncrasies, to sentimentalize, to invite moods and to be-

lieve eventually that he is not made of rough world-stuff, but that he is essentially spiritual and poetical.

Quite in contrast is his fellow student who, in his adolescent judgment, thinks he, too, has seen a spectre of inferiority, but who buckles on a thick armor of bravado and defends himself by attacking. The idea that he may be inferior is intolerable, and he endeavors to prove to himself that he is not by developing an enormous self-conceit and by attempting to bowl over opposition. He may not be an unattractive youth and is likely to "get by" for a time but his device is a boom-rang.

Equally confusing to the individual and probably even more important in its complicated social effects is the process students find of transferring emotions. Something must be done with a strong emotion. It will not evaporate. It may be partially satisfied by rationalizing a cause for it, or one may rid one's self of it by assigning it to elements in the environment. Borne down by a sense of failure and inadequacy, self-respect may be maintained by finding the cause not within one's self, but in the unfairnesses and the unjustness and the misunderstanding of others. They and not we are to blame; self-respect is in part maintained, but at the cost of a habit that is insidious and capable of much-elaboration and development. Emotions may be transferred bodily, so that what is in reality a dissatisfaction and disgust with one's self becomes an intense dislike and antagonism towards another individual against whom we have no cause for complaint, except—and this we may realize but vaguely—that he somehow keeps us aware of the deficiencies and inadequacies we are trying to ignore.

These and similar reactions, simple and harmless as they may seem, lead, as those who have cultivated them move in life to more critical and complicated relationships, to many perplexing personal and social difficulties.

During the social confusion of the last few years there have been those who have been puzzled, or alarmed, or angered by the apparent radical tendencies of college groups. On the whole these "radicals" have been among the more intellectual of the students, in spite of the fact that some have found reason to question their intellectual capacity and others have considered them "cracked" or not just right in the head. Few, I think, except in psychiatric circles, have considered them university casualties and yet, clearly, that is what many of them are. The intellectual integrity of many cannot be questioned whether we approve of their views or whether we do not, but the mental integrity of others is quite open to question. Two men may hold identically the same opinion on any given subject and one may be mentally sound and the other mentally sick. The sanity or lack of it is not to be determined by the opinion but by the source of the opinion. Very many of these young radicals, and, just as truly, very many of their most zealous opponents, both old and young, are of, or derived from, the group of students we have been discussing—students whose intellects and whose physical condition have been carefully attended to, but whose emotional lives and habits have been permitted to take their own course. Finding no other suitable outlet, emotional energies generated at sources quite apart from and bearing but slight if any relationship to the situation at hand (usually quite ascertainable sources) have flown into these social situations. At first the student may be quite surprised at the intensity of his reaction to a situation about which he thought he had some doubt. He is somewhat taken aback by the strength and sharpness of his ability to "hate" and to "admire" in spite of a faint intellectual questioning. But whatever of intellectual doubt there may have been in the beginning is soon swallowed up in the intensity of his emotions, and

his personal reaction (emotional) to a situation is taken as a personal understanding (intellectual) of the situation. In such a position he is impregnable, for direct assault is not possible. We blame him for the harm he may do. In time of war we throw him into prison and in time of peace we hurl epithets; if we have any feeling of responsibility for him, it is probably no more than a weakly eugenical one of blaming ourselves for ever having permitted him to be born.

In no case is the process quite as simple as I have described it. These few types of reactions that I have discussed do not occur singly, but in various combinations one with the other and with many deeper lying and more complicated reactions that I have not discussed until the result becomes the seemingly inexplicable thing we know as temperament or personality or idiosyncrasy, or queerness, or disease, depending upon the qualitative or quantitative variant of its elements, but, in any case, all off the same piece of cloth. Thus the fount from which pours out our emotional life may be poisoned at its source. Our personalities cannot endure naked before the forces that assail them any more than can our bodies. Protection of some kind becomes necessary, but in building our protection we build clumsily, for we burden ourselves by seeking to protect ourselves, not alone from the forces, but from the fears that for us still reside in the forces. In the physical field knowledge has made us more skillful. We erect roofs over our

heads to protect ourselves from the elements; but we are helped by knowing that those roofs are to protect us from the rain, the wind, and the cold, and not handicapped by believing we must build against demons and angry gods that reside in these elements.

In spite of increased skill in training intellects and in spite of increased facilities for the protection of the physical health of students, and more power to both of them, the goal, if that goal be the increase of human happiness and efficiency, will not be reached by these alone, for neither happiness nor efficiency is fundamentally dependent upon them. Emotions as well as intellect and mental health as well as physical health must be made a part of the program. In thus widening our program we will have immediately in mind:

1. The conservation of the student body; that intellectually capable students may not be forced unnecessarily to withdraw but may be retained;
2. The forestalling of failure in the form of nervous and mental disease—immediate or remote;
3. The minimizing of partial failure in later mediocrity, inadequacy, inefficiency, and unhappiness;
4. The making possible of a larger individual usefulness by giving to each a fuller use of the intellectual capacity he possesses, through widening the sphere of conscious control and thereby widening the sphere of social control.



Not too early to be thinking about the Fifteenth Annual Meeting of the A. P. H. A. in New York City, November 14-18, 1921.

STANDARDIZATION OF BOTULISM ANTITOXINS

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Read before Laboratory Section, American Public Health Association, at San Francisco, Cal.,
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THE value of standard methods for testing and for stating the potency of diphtheria and tetanus antitoxins is universally acknowledged. Before the work at the Hygienic Laboratory was done,* establishing United States standards for these products, nothing definite was known as to the comparative strength of different lots of antitoxin in this country. Firms manufacturing these serums used different units in expressing the potency of their respective products and different methods of testing so that it was difficult or impossible to compare the strength of one antitoxin with another.

Official standards have been promulgated by the United States Public Health Service and a unit established for measuring the potency of tetanus and diphtheria antitoxin, and the testing of these products has been placed on a very satisfactory basis. A uniform method of stating the potency or the number of units contained in a serum per cc. has been adopted. Serums are required to contain a certain number of units and immunizing and therapeutic doses are prescribed in terms of U. S. units instead of volume. The advantages are so obvious as not to require elaboration.

While the value of treatment of botulism with the antitoxin of *Bacillus botulinus* is uncertain in cases where severe symptoms have developed, it is possible that it may be of some value in cases showing mild symptoms and of definite value when it is possible to use it prophylactically, such as might be the case when one or more members of a group who have partaken of food contaminated with

B. botulinus fail to develop symptoms as early as others. Since the serum is the only specific treatment known for the disease, it is probable that recourse will be had to the use of antitoxin whenever it is available. Such being the case, it is necessary that the serums be potent and that we have a standard method whereby we may measure their potency. The purpose of this work has been to establish such standards.

The method used by the Hygienic Laboratory for the testing of botulism antitoxins types A and B, does not differ in principle from that used for measuring the potency of diphtheria and tetanus antitoxins. An arbitrary amount of standard antitoxic serum for each type is used as the unit of measurement for determining the potency of antitoxins of unknown potency. Both the standard antitoxin of known value of which a definite amount is used and the antitoxin under test of unknown value of which varying amounts are used, are tested against the same dose of toxin, and by a comparison of the results obtained the potency of the unknown antitoxin may be determined in terms of the standard antitoxin.

Toxin.—Cultures of *B. botulinus* of both types A and B yield strong toxins when grown in dextrose beef infusion broth containing a small amount of veal incubated at 37° C. for a period of 10 to 14 days. An initial reaction of pH 9.0 has been found favorable for production of strong toxin. Toxins varying in strength from 0.000,01 to 0.000,1 cc. of filtrate as a minimal lethal dose for 250-gram guinea pigs were obtained by the use of this medium. The filtrate was found to be fairly stable and the toxin

*Hygienic Laboratory Bulletin No. 21, and Miscellaneous Publication No. 10, U. S. Public Health Service, Washington, D. C.

may be used in this form for testing the potency of unknown antitoxins. It seems probable that there is a certain amount of slow deterioration and that the filtrate may reach a stage of equilibrium after a process of "ripening" as in the case of diphtheria toxin. Until further experiments have been carried out to determine whether this is true, it will be necessary to test any particular filtrate each time it is used against the standard antitoxin unit to determine the "test dose."

In our work of standardization dried toxins were used. Tetanus toxin, though exceedingly unstable and unreliable in the form of filtrate, has been found to be very stable in the dried state continuing at the same point of toxicity over a period of many years when preserved under proper conditions of cold and protected from light and air. It was apparent that a considerable period of time would be necessary to accomplish the work of standardization and it was desirable that the toxin be stable over at least this period. Therefore, it seemed advantageous to use dried toxins which might be expected to be as stable as dried tetanus toxin has been shown to be. This has been found to be the case and exposure of the dried toxin to adverse conditions of temperature, light, etc., has shown it to be at least as stable as the tetanus toxin and probably more so.

Precipitation of the toxin was effected by the same methods as those used for the precipitation of tetanus toxin. By saturating with ammonium sulphate the toxin was salted out and could be skimmed from the surface. After drying over sulphuric acid it was ground to a fine powder and stored *in vacuo* in the cold and dark. The most potent toxin obtained by this method was fatal to a 250-gram guinea pig in amounts of 0.000,000,1 g.

Antitoxin.—For the standard antitoxins, the most potent serums of each of the types which were available at the time were mixed with glycerin in the proportion of one part of serum to two

parts of glycerin. This was distributed in small glass-stoppered bottles of 7-8 cc. capacity. Whether antitoxin preserved in this way is as stable as a dried serum is not certain, but a number of tests which have been carried out at stated intervals against dried toxins indicate that the preparation is very stable.

Standardization.—A dried toxin of each of the types A and B was used as the basis for determining the standard unit. The approximate minimal lethal dose for a 250-gram guinea pig was determined for each toxin and an arbitrary amount of toxin containing about 100 minimal lethal doses was used as a test dose preliminary to establishing the unit. The smallest amount of glycerinated serum of each type, which when mixed with this test dose of its corresponding toxin and injected into a 250-gram guinea pig, caused the death of the guinea pig within 96 hours, was considered to contain 1/10 of a unit; a unit of the standard antitoxin, therefore, just fails to neutralize approximately 1,000 minimal lethal doses of the original dried toxin. In all tests if guinea pigs weighing more than 250 grams are used, the doses of toxin and antitoxin are increased in proportion to the weight.

Testing.—In carrying out a test to determine the potency of an antitoxin of unknown value the standard antitoxin is used as the basis of measurement. The test dose of toxin used in establishing the standard in the hygienic laboratory as stated above, was approximately 100 minimal lethal doses of the dried toxins originally used, but in carrying out tests in which other toxins are used it will be necessary to determine the test dose by titrating the particular toxin against 1/10 the standard unit of antitoxin. The dose will probably vary from 50 to 200 minimal lethal doses, since the combining power of different toxins is variable. The test dose of toxin will be that amount which when mixed with 1/10 the standard antitoxin unit and injected into a 250-gram guinea pig just fails to

TABLE 1
POLYVALENT ANTITOXIN X

Guinea pig No.	Weight	Type	Toxin			Antitoxin					Salt solution to make a total of 4.0 cc.	Time of death	
			Dose per 250 g.	Actual dose	Dilution	Amount of dilution injected	Type	Dose per 250 g.	Actual dose	Dilution			Amount of dilution injected
Standard Antitoxins	790	Type A	0.00034 g.	0.00034	1/5000	1.7 cc.	Standard	0.04 cc.	0.04 cc.	1/25	1.0 cc.	1.3 cc.	60 hrs.
	791	Type A	0.00034	0.00038	1/5000	1.9	Antitoxin A	0.04 cc.	0.0448	1/25	1.12	1.0	99 hrs.
	792	Type B	0.0018	0.0018	1/1000	1.8	Antitoxin A	0.0008 cc.	0.0008	1/1250	1.0	1.2	76 hrs.
	793	Type B	0.0018	0.00202	1/1000	2.02	Antitoxin B	0.0008 cc.	0.000895	1/1250	1.12	0.9	92 hrs.
Antitoxin under test	799	Type A	0.00034	0.00034	1/5000	1.7	Antitoxin X	0.1 cc.	0.1 cc.	1/10	1.0	1.3	Survived
	800	Type A	0.00034	0.00034	1/5000	1.7	Antitoxin X	0.01	0.01	1/100	1.0	1.3	Survived
	801	Type A	0.00034	0.000354	1/5000	1.77	Antitoxin X	0.005	0.0052	1/100	0.52	1.7	Survived
	802	Type A	0.00034	0.000367	1/5000	1.84	Antitoxin X	0.002	0.00216	1/500	1.08	1.1	57 hrs.
	803	Type A	0.00034	0.00038	1/5000	1.9	Antitoxin X	0.001	0.00112	1/1000	1.12	1.0	47 hrs.
	804	Type A	0.00034	0.000408	1/5000	2.04	Antitoxin X	0.0005	0.0006	1/1000	0.6	1.4	26 hrs.
	805	Type B	0.0018	0.0018	1/1000	1.8	Antitoxin X	0.1	0.1	1/10	1.0	1.2	Survived
	806	Type B	0.0018	0.0018	1/1000	1.8	Antitoxin X	0.01	0.01	1/100	1.0	1.2	47 hrs.
	807	Type B	0.0018	0.00187	1/1000	1.87	Antitoxin X	0.005	0.0052	1/100	0.52	1.6	27 hrs.
	808	Type B	0.0018	0.00194	1/1000	1.94	Antitoxin X	0.002	0.00216	1/500	1.08	1.0	24 hrs.
	809	Type B	0.0018	0.00202	1/1000	2.02	Antitoxin X	0.001	0.00112	1/1000	1.12	0.9	17 hrs.
	810	Type B	0.0018	0.00216	1/1000	2.16	Antitoxin X	0.0005	0.0006	1/1000	0.6	1.2	17 hrs.

The results of this test show that the amount of antitoxin just sufficient to neutralize a test dose (approximately 100 minimal lethal doses) of toxin A lies between 0.005 and 0.002 cc. and for type B between 0.1 and 0.01 cc. Another test was, therefore, put on with decreasing amounts of antitoxin at intervals of a percentage difference of about 50 between these limits (Table 2).

TABLE 2
POLYVALENT ANTITOXIN X

Guinea pig No.	Weight	Toxin			Antitoxin									
		Type	Dose per 250 g.	Actual dose	Dilution	Amount of dilution injected	Type	Dose per 250 g.	Actual dose	Dilution	Amount of dilution injected	Salt solution to make a total of 4.0 cc.	Time of death	
Standard Antitoxins	846	250	Type A	0.00034 g.	0.00034 g.	1/5000	1.7	{ Standard Antitoxin A Standard Antitoxin A Standard Antitoxin B Standard Antitoxin B	0.04 cc.	0.04 cc.	1/25	1.0 cc.	1.3 cc.	96 hrs.
	847	270	Type A	0.00034	0.000368	1/5000	1.84		0.04	0.0432	1/25	1.08	1.1	122 hrs.
	848	250	Type B	0.0018	0.0018	1/1000	1.8		0.0008	0.0008	1/1250	1.0	1.2	113 hrs.
	849	270	Type B	0.0018	0.00194	1/1000	1.94		0.0008	0.000865	1/1250	1.08	1.1	94 hrs.
Antitoxin under test	835	250	Type A	0.00034	0.00034	1/5000	1.7	Antitoxin X	0.0068	0.0068	1/100	0.68	1.6	Survived
	836	260	Type A	0.00034	0.000354	1/5000	1.77	Antitoxin X	0.0045	0.00467	1/100	0.467	1.8	Survived
	837	260	Type A	0.00034	0.000354	1/5000	1.77	Antitoxin X	0.003	0.00312	1/500	1.56	0.7	Survived
	838	290	Type A	0.00034	0.000394	1/5000	1.97	Antitoxin X	0.002	0.00232	1/500	1.16	0.9	113 hrs.
	839	250	Type B	0.0018	0.0018	1/1000	1.8	Antitoxin X	0.12	0.12	1/10	1.2	1.0	Survived
	840	260	Type B	0.0018	0.00187	1/1000	1.87	Antitoxin X	0.08	0.083	1/10	0.83	1.3	Survived
	841	260	Type B	0.0018	0.00187	1/1000	1.87	Antitoxin X	0.053	0.055	1/10	0.55	1.6	Survived
	842	270	Type B	0.0018	0.00194	1/1000	1.94	Antitoxin X	0.035	0.0378	1/50	1.89	0.2	Survived
	843	280	Type B	0.0018	0.00202	1/1000	2.02	Antitoxin X	0.023	0.0258	1/50	1.29	0.7	113 hrs.
	844	290	Type B	0.0018	0.00208	1/1000	2.08	Antitoxin X	0.015	0.0174	1/100	1.74	0.2	89 hrs.
	845	300	Type B	0.0018	0.00216	1/1000	2.16	Antitoxin X	0.01	0.012	1/100	1.2	0.6	65 hrs.

The antitoxin contains at least 33 units of type A antitoxin, since 0.003 cc. of the antitoxin protected against the test dose of toxin A and about 3 units of type B antitoxin since 0.035 cc. protected against the test dose of toxin B.

be neutralized by this amount of antitoxin, as shown by death within 96 hours. The test dose of toxin having been established, the number of units in the antitoxin of unknown value is determined by testing varying amounts of antitoxin against the "test dose" of toxin. The smallest amount of antitoxin for human use which when mixed with the test dose of toxin is sufficient to *save* the life of a 250-gram guinea pig is considered to contain 1/10 of a unit. From this the number of units per cc. may be calculated. Control animals are inoculated at the same time with the same dose of toxin mixed with 1/10 of the standard unit and this amount of the standard should just fail to neutralize the dose of toxin.

Since the two types of *Bacillus botulinus* produce toxins which appear to be entirely specific, it is necessary to test a serum of one of the types against the homologous type only. A "polyvalent" antitoxin is tested for its neutralizing power against the toxin of both types A and B.

Several antitoxins from different sources have been tested at the Hygienic Laboratory and have been found to have unitages ranging from 2 to about 450 per cc. Judging from the rather limited number of serums tested, it appears that antitoxins against type A toxin, the type which would have been applicable in most of the recent cases of food poisoning due to *B. botulinus*, have been low in potency, some of the earlier ones containing only two units per cc. Some later polyvalent antitoxins have contained up to about 40 units of type A antitoxin. Very much stronger antitoxins of type B have been received. It also appears from a limited number of observations on the serums received for test that it is difficult to produce "polyvalent" sera, and that in such sera antitoxins of one or the other type are predominant, though the horses have received the same amounts of the two different toxins.

The following is an example of a test on a polyvalent antitoxin of unknown potency. (Tables 1 and 2):

A statement of the definition of the unit and method of testing is appended:

The unit of botulism antitoxin (type A) is a definite amount of the standard antitoxin; for the standard antitoxin in the concentration used at present, and to be sent out to serum establishments which may be licensed for the production of botulism antitoxin, the unit is 0.4 cc. of the glycerinated solution. The antitoxin to be tested is compared with the standard unit by means of a test dose of toxin; any toxin which is several weeks old may be used for this purpose; this test dose of toxin is chosen so that when mixed with 1/10 of a unit of the standard antitoxin and injected subcutaneously into a 250-gram guinea pig, the guinea pig will die in about 96 hours. That amount of the unknown antitoxin which when similarly mixed with the test dose of toxin and injected will protect the 250-gram guinea pig for about 96 hours, therefore contains 1/10 of a unit. The test dose of toxin will usually be found to contain from 50 to 200 minimal lethal doses. Before injection the doses of toxin and antitoxin are to be thoroughly mixed, and then kept at room temperature for one hour to allow combination to take place. The guinea pigs should be between 250 grams and 300 grams in weight and the doses of toxin and antitoxin are to be increased proportionately to the weight for guinea pigs weighing over 250 grams. With every test of an unknown antitoxin, two control guinea pigs should receive the test dose of toxin mixed with the test dose (1/10 unit) of standard antitoxin, so that the two antitoxins may be accurately compared and the test dose of toxin increased if necessary in subsequent tests; liquid toxins have been found to decrease gradually in toxicity. In diluting the standard antitoxins, the method indicated on the label should be followed.

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THE HEALTH OF THE COLLEGE

In appraising the health of the college and university, allowance must be made for the salient advantage which they enjoy in comparison with ordinary communities—a homogeneous population falling within one of the most disease-resistant age groups.

Considering this advantage and the unequalled opportunity which the college has for carrying out a high-grade health program, the question is not "Is the health of the students good?" The answer to that question goes without saying, with no accrual of credit to the college. Youth will survive in an apparently highly viable state under almost any circumstances. The question is, rather, "Is there a comprehensive, actively executed plan to eliminate what serious defects exist among the college population; to correct the minor (so-called) interlocking handicaps, such as unnecessary fatigue, constipation, eye-strain, poor posture, etc., so often unappreciated as drags on academic accomplishment and as the beginnings of the ailments of middle life; to protect the college population from epidemic disease; to demonstrate results, and to make the college pre-eminent in sanitary organization?"

With its homogenous population, and its compact, long-tenure organization, the college is in a uniquely favorable position to carry to their conclusions all the lines of public health work—educative, protective and corrective. It can control living conditions and furnish a scientifically adjusted diet for a large part if not all of its students. It can encourage habits of outdoor exercise that will form a lasting foundation of vitality. It can make complete and frequent physical examination for the students' immediate benefit and for scientific study. It can keep complete morbidity statistics of the student body, and vital statistics of the alumni. There should be frequent, regular publication of the college bill of health, with no omission and no concealments. (The days of secrecy as a public

health measure to forestall hysteria have passed.) Such data should be used as part of the material for a powerful system of instruction and propaganda for better college health. Health instruction should be under constant supervision not only to answer the question of whether or not the students enjoy it, but to ensure its scientific soundness and to demonstrate that it plays more than a negligible part in the prevention of disease.

The college infirmary, where the institution is located in towns of any size, can, in conjunction with local hospitals, make full use of the principle of group and consultative diagnosis, on its medical side. The infirmary should, however, function primarily as a prophylactic clinic, with an unfailing system of receiving and acting on reports of communicable disease. The college should control, according to the most approved standards, the general sanitation of the plant.

All of these phases of health work should be tied together by an interdepartmental health board including every department that has a contribution to make—bacteriology, chemistry, medicine, publicity, hygiene, physical education—and excluding professional precedence *per se*. These and other things, which the ordinary community can never hope to accomplish with any degree of completeness, the college can, if it will, put into effect with whatever balance between paternalism and individual freedom of choice it sees fit to establish. Not by its fruits, but by its accomplishment in relation to its opportunities, shall we know it, the college board of health. Certainly the obligation of the college is plain, both toward its students and toward the community in which it is situated.

Fortunately there are institutions which have progressed far in the direction of a strong health organization. Furthermore, the recently established Students' Health Association (which, let us hope, will in the near future increase the value of its work by issuing a publication) may perform an important service in making comparative studies whereby college faculties and governing bodies may be quickly educated to a knowledge of the importance of a high standard of public health and of what can be and is being done to attain it.

E. C. HOWE.

THE TOLL OF WHOOPING COUGH AND MEASLES

If we exclude the pneumonias, our most common acute infectious diseases are diphtheria, whooping cough, measles and scarlet fever.

Diphtheria and scarlet fever are regarded very seriously and are much feared by the public. This is as it should be, for certainly these diseases have taken their deadly toll each year. But whooping cough and measles are considered trivial diseases by many parents and even a few health officials. There is, in fact, a current belief that, since children will probably have these diseases at some time, the sooner they are "had" and "over with" the better.

Yet 5% of all deaths under five years in Massachusetts for the five-year period 1915-19 were from whooping cough and measles as against 3½% from diphtheria and scarlet fever. In the second year of life the figures were 11.2% for the former two diseases and 5.6% for the latter. In the first year the figures were 2.2% and .5% respectively. Both whooping cough and measles are among the first ten causes of death for children under five. Either one causes more deaths in this age group than combined deaths from typhoid fever, smallpox, syphilis, infantile paralysis and cerebrospinal meningitis. In the second year of life measles has killed more children under five than any other acute infectious

disease except pneumonia (many pneumonia deaths being in fact complicated by measles).

Education is the chief remedy. Such measures as prompt reporting of cases, their isolation, daily school inspection and the follow-up of school absentees must, of course, be strictly carried out. But education is, in the long run, surer and of more permanent value. It is based on reason and is not arbitrary. Without it necessary coöperation cannot be obtained. With it the need of the restrictions imposed will be appreciated by the public with the result that their help is obtained.

In our teaching we must emphasize the fact that the greatest danger from these diseases is in the early years of life—before the end of the fifth year and especially before the end of the third. If parents could defer them until the end of the third year most of the 79% of our measles deaths and of the 85% of our whooping cough deaths that occur before then would disappear. If the evil day could be deferred until the end of the fifth year the figures would be 90% and 95% respectively. When we consider the small remaining mortality from these diseases after five years of age, for instance, the wisdom of trying to defer them that long at least is apparent.

Another point on which we must educate the public is that many of these deaths are from complications with pneumonia and other diseases and that with proper medical, nursing and hygienic care these complications are largely preventable. Complications are frequent and not trivial and every case should be under a doctor's supervision and instruction.

EUGENE R. KELLEY, M.D.

CORRECTIONS.

In the January JOURNAL, page 71, Dr. Henry Hanson, author of an article on "Sanitary Conditions in Peru," page 13 et seq of the same issue, is referred to as "a Boston man." The impression came to the editor through association with Mr. Philip Ainsworth Means, who is a Boston man, that he also belonged in that city. From Dr. Victor H. Bassett of Savannah, Ga., the JOURNAL has received the following note concerning Dr. Hanson, which sets forth the story which correspondence with the gentleman himself failed to develop.

"Dr. Hanson was born in South Dakota and is a graduate of the University of South Dakota and of Johns Hopkins Hospital Medical School. Dr. Hanson received his experience, prior to his work in Panama, in the West and South, having served on the staff of the Milwaukee County Hospital as Pathologist and Assistant Superintendent, and having had charge of the laboratory work of the Florida State Board of Health in Jacksonville and in the branch state laboratories in Pensacola, Tampa and Miami."

J. R.

The February issue of the JOURNAL contained the following statement on page 106 in the article of Dr. George Hoyt Whipple on "The Value of Animal Experimentation by Mankind":

"An accurate and conclusive diagnosis [of rabies] can only be made by means of inoculating material from the suspected animal into a normal animal."

A communication from the author is received to the effect that the intent was to emphasize the value of animal inoculation as a confirmatory test. The importance of the microscopic test for negri bodies is freely granted by the author.

A. W. H.

In Memoriam

THE PUBLIC HEALTH WORK OF PROFESSOR SEDGWICK

WILLIAM THOMPSON SEDGWICK, son of William and Anne Thompson Sedgwick, was born at West Hartford, Connecticut, Dec. 29, 1855. His colonial ancestor was Robert Sedgwick who settled in Boston in 1636. He studied at the Sheffield Scientific School, the Yale Medical School, and Johns Hopkins University. On his 26th birthday he married Mary Katrine Rice at New Haven, Connecticut. In 1883 he came to Boston and the Massachusetts Institute of Technology, where for thirty-eight years he was Professor of Biology and Public Health. He died at Boston, January 25, 1921, at the age of sixty-five.

These simple facts tell who Professor Sedgwick was. But what he was and what his life meant to the people of Boston, to hundreds of young students, to the science of public health, and to the Commonwealth of Massachusetts cannot yet be told or even estimated. His death is too recent and our thoughts are still so touched with sadness that one cannot adequately picture his manifold activities or form a just appreciation of his life or his place in history. But in the various notices already written a few words stand out prominently and must be regarded as characteristic of the man. The words are service, public service, kindness, serenity, inspiration, buoyant optimism, love of young men. Let these suffice. They are eulogy enough for any man.

I have been asked to tell you something about Professor Sedgwick's work in public health. I cannot do so without saying more about my own relations to it than might be becoming, but it is characteristic of his work that it was not done in the seclusion of his study and laboratory, but involved all those with whom he came in contact.

I first knew Professor Sedgwick when I was a student of engineering and he Professor of Biology at the Institute. He was thirty-three and I was twenty-two. For the first time (1888-9) he was giving a course of lectures in bacteriology to civil engineers. It was an innovation. Until then sanitary engineering had leaned for support on chemistry, and here was a new science coming to its aid. I have in my study the notes which I took of Professor Sedgwick's weekly lectures. They began as follows: "The sanitarian needs a proper working theory." Then he proceeded to develop the germ theory of disease as he had learned it from Pasteur and the European scientists who were laying the foundations of that science which has done so much for the health of the world. He showed how physicians and engineers had been wrong, how they had groped in the dark, and how, by applying the recently discovered principles of biology, it was possible to give to sanitary engineering new life. Of course, Sedgwick was not the only American to take up with the new ideas. There was Dr. Welch at Johns Hopkins, Dr. Biggs in New York, and others who were doing the same thing. But these other men were in medical schools; Sedgwick was at the Institute of Technology where the engineering sciences predominated and therefore his influence on sanitary engineering was the greatest. Nor would it be right to ignore the work of his colleagues in chemistry, such as Professor William Ripley Nichols and Dr. Thomas M. Drown. It was the combination of chemistry and biology with engineering which made the profession of sanitary engineering what it is—a profession which we are proud to think has become more highly developed in America than in any other country.

It is important to keep in mind certain dates in connection with the work of these Massachusetts scientists. Louis Pasteur's pioneer work in bacteriology was done in the seventies. In 1876 Robert Koch discovered the germ of anthrax. In 1882 he suggested the use of solid culture media and thus made it possible to consider bacteria in a quantitative way. In 1880, Eberth found the bacillus of typhoid fever. In the same year Laveran had discovered the parasite of malaria. In 1883-4 Klebs and Löffler found the germ of diphtheria, and in 1883 Koch the cholera spirillum. Then remember, it was in 1883 that Sedgwick undertook his work in Boston. No wonder that he saw a great future for his beloved science of biology; no wonder that he gave up his intention of being a physician.

Sedgwick did not study bacteriology in Europe, but I remember hearing him tell how he received what was perhaps the first batch of Dr. Koch's sterilized nutrient gelatine sent to this country. Professor Nichols brought it over and probably had not realized its physical properties, for it had melted, had saturated the cotton plug of the flask, had oozed out, had become infected and nauseating and was about as far from having the required bacterial purity as one could imagine. It was an inauspicious beginning for bacteriology at the Institute. Professor Nichols must have chuckled over it, for at that time he did not share Sedgwick's optimism in regard to the future of this science.

I remember those first lectures of Sedgwick's. He would hold up a glass of water and talk for an hour about what it contained. He would excite us by saying that it contained enough germs of typhoid fever to give the disease to a thousand people, and then go on to show how sanitary engineers could make the water safe to drink.

He started his students off on a hunt for bacteria. One of them studied the

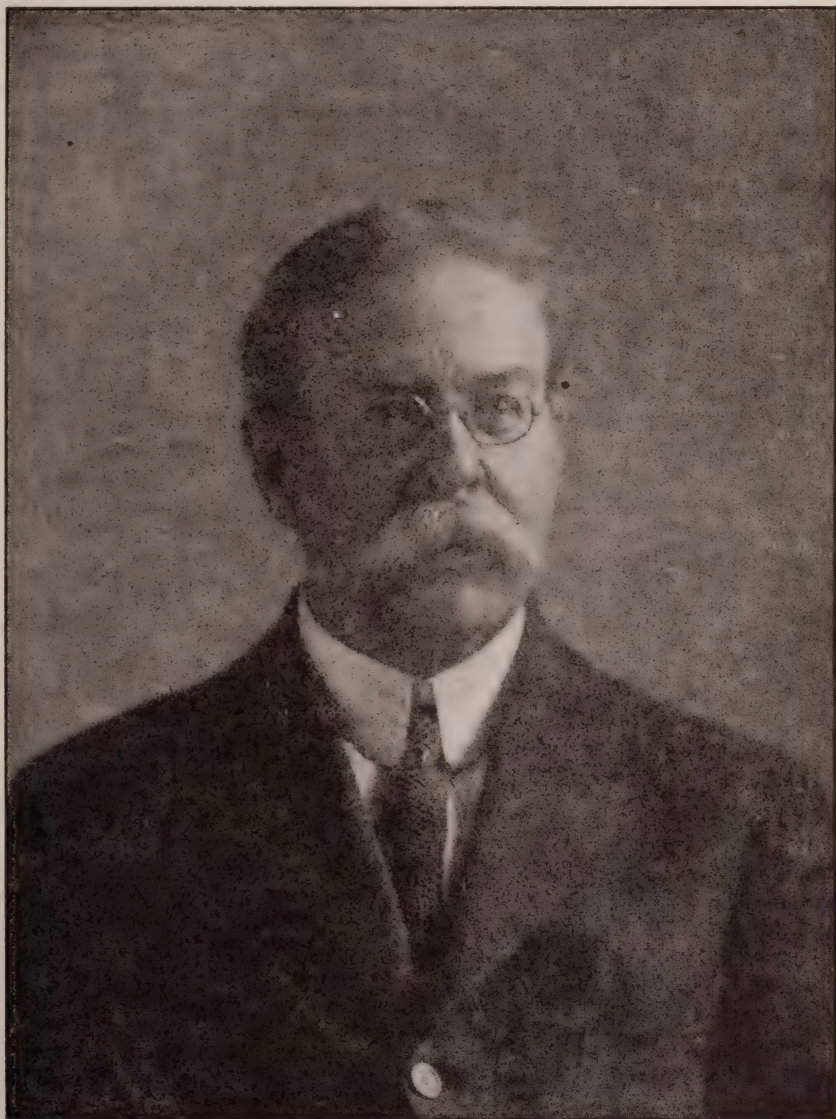
bacteria found in air, especially the air of hospitals, for he was hunting for big game. Together they devised a method for straining the bacteria from the air—an aërobioscope—a method still used. Another student helped him to study water, not only its bacteria, but its other microscopic organisms. Another new method of study was devised, the Sedgwick-Rafter method, still used today.

One of his students took up the study of milk; another that of food; and today the Institute has an important department of industrial biology. Several studied sewage and its methods of treatment, and for years this continued to be a fruitful field of research. Another studied the bacteriology of ice; and still another the bacteriology of soil. Then there were studies of particular species of bacteria, the longevity of the typhoid bacillus, and so on. The reason for mentioning these things is to illustrate the breadth of the investigations and the fact that Sedgwick always worked with and through his students. He did very little scientific work alone and he generally gave to his students more than a fair share of the credit for the work done.

When, after a long experience as a practicing engineer, I came to Harvard to teach, I had many talks with Sedgwick about methods of teaching. He was no longer thirty-three years old, but fifty-five. He had been teaching for twenty-five years, and he gave from his experience. He said: "I keep three things in mind,—the past, the present, and the future. First, I teach by the historical method. That has two advantages: my students learn what has been done, and my lectures don't have to be written over every year. Second, I teach of what is going on now." His present-day students knew well his habit of rushing into the lecture-room with a clipping from the morning paper or a copy of a medical journal and talking about something which someone had discovered in Chicago or the Fiji Islands, or about some

WILLIAM THOMPSON SEDGWICK

1855-1921



Photograph from Jamieson Studios, Boston

new engineering project. All kinds of fish were caught in his net, and he believed that the students should study these fish while they were alive. Thirdly, he said, "I try to teach of what is likely to happen in the future. I try to make the students see the problems they will be up against." History, present problems, and research,—these were his three principles.

His teaching was far from being exact. Sedgwick did not have a mathematical mind. His lectures were never formally prepared and as he grew older they became less methodical. He cared for general principles more than for details. The opening sentence of his first lecture to engineers which I have already quoted shows what he wanted most to impress upon his students. "The sanitarian needs a proper working theory." But it was chiefly his personal magnetism and his inspiration which told on his students, and this never failed him. His optimism was as strong at sixty-five as it was at thirty-five.

Sedgwick will be remembered first and foremost as a great teacher,—yes, even as a teacher of teachers,—because his enthusiasm was contagious and others followed in his steps. One has only to mention Dr. Calkins of Columbia, Dr. Jordan of Chicago, Dr. Winslow of Yale, Professor Gunn, and others, now well-known, to realize the extent of Sedgwick's influence as a teacher upon teachers. But among his pupils are sanitary engineers, bacteriologists, health officers, laboratory workers in many fields, Red Cross officials, physicians, nurses, manufacturers, teachers of domestic science, housewives,—men and women, a great company of enthusiastic followers, who recognized him as "Chief."

Soon after Sedgwick came to Boston the Massachusetts State Board of Health began to apply the new ideas in biology and chemistry to the purification of water and sewage under the leadership of Dr. Henry P. Walcott, who for a quarter of

a century was Chairman of the Board, and Mr. Hiram F. Mills, a hydraulic engineer, who for an equally long time gave most valuable service to the Commonwealth. A small station for making experiments with sewage and water was built at Lawrence, Mass. Professor Sedgwick was consulting biologist of the Board and Dr. Drown was consulting chemist. For many years, even up to this day, the Lawrence Experiment Station has been a center of scientific activity. Some of the leading sanitary engineers of the country began their work there.

While this scientific study of the chemistry and biology of water and sewage was in full activity (1890), a notable epidemic of typhoid fever swept down the Merrimac valley. Professor Sedgwick made a thorough study of this catastrophe and developed methods of investigation which have been followed by American epidemiologists ever since. Although not a mathematician, he marshalled statistics and used them with telling force and drew from them logical conclusions which could not be upset. As a result of the epidemic and the research at the experiment station, the first scientifically designed municipal water filter in America was built at Lawrence. In this matter one cannot give the credit to Sedgwick alone, for it was the entire group of scientists who deserve the credit, Mills, Stearns, Drown, Sedgwick, Hazen, Fuller, and others, most of all perhaps to Mr. Mills. Through them America gave to the world scientific ideas in regard to the disposal of sewage which revolutionized methods of treatment and stimulated the construction of disposal works in scores, perhaps hundreds of cities, in this country and abroad.

Sedgwick became a great interpreter of this scientific work. He joined the New England Water Works Association in 1890, but as early as 1888 he had contributed a paper on the "Biological Ex-

amination of Water." He was chosen President of the Association in 1905, having already, in 1904, been made an Honorary Member. His last address before the Association was delivered on September 11, 1918, on a subject appropriate to the times, "From Peace to War, from War to Victory, from Victory to Just Judgment." Those who heard it will never forget the stirring words in which he called for stern justice for Germany and appealed to a higher ideal of God than that held by the Kaiser, —the ideal of Christianity, the ideal of civilization. Sedgwick never separated his science from his patriotism or his religion. He could make science popular and he could take subjects of popular interest and clothe them in the language of science.

The American Public Health Association also claimed Sedgwick's attention. He became a member in 1902 and its President in 1915. He was a member of many committees, was a frequent speaker, most of his addresses having relation to the broader aspects of public health work. It is hardly worth while at this time to recite the long list of scientific societies to which he belonged, but mention should be made of the Society of American Bacteriologists, which he helped to found and of which he was President in 1900, of the American Society of Naturalists, over which he presided in 1901, and the American Academy of Arts and Science, of which he was a Fellow and to which he gave much time and thought. Society memberships today measure the breadth of a man's interest and give him opportunities for bringing his ideas before the scientific world. Some men are merely "belongers;" others, like Sedgwick, do their full part in promoting the objects of the societies which they join. As Professor Sedgwick advanced in life, his interest changed from one scientific society to another and his scientific papers shifted from the record of detailed studies to

educational and philosophical problems. That change marked the normal development of an active, broadening mind. So we may add to Sedgwick's fame as a great teacher that of interpreter of science.

We must next look upon him as a Councilor in Public Health. In 1914 when the State Board of Health was replaced by a Health Commissioner and Public Health Council, Sedgwick was appointed as a member of the Council and served in that capacity until his death. Together the Commissioner and Council constitute the State Department of Public Health. Its work is done partly through committees, and Sedgwick served on the Committee on Sanitary Engineering and was Chairman of the Committee on Food and Drugs. It is difficult to pick out from the many-sided activities of the State Department any particular work which was his, for in one way or another he has been in all of them. He was an ideal councilor. His scientific knowledge, his ripe experience, his grasp of fundamental principles made his advice respected by us all. His facility in writing clear and simple English was most useful to the Council in the preparation of reports. His graceful yet forceful manner of speaking caused him to be chosen on many occasions to represent the Department and whether he spoke before a legislative committee or a large public meeting he was always effective. Many a fight he has had at the State House with anti-vivisectionists, anti-vaccinationists, and various other kinds of antis, but his method of fighting was merely to state his side of the case, simply and forcefully, letting his opponent have a monopoly of the fireworks. It was perhaps one of his faults that he was not aggressive enough. But on occasions he became eloquent. Last year at the Brussels Conference of public health officers, representatives of various nations, gorgeously arrayed in uniform, had been following the conventional lines of such

gatherings before a somewhat restless audience when Sedgwick's turn came. He was there to represent the American Public Health Association, Harvard University, the Massachusetts Institute of Technology, and the U. S. Public Health Service. Simply dressed in his academic robes, he arose and spoke for ten minutes. He praised brave little Belgium and faithful France for saving the world; he gave to England the credit of being the father of public health administration; and then he spoke for America. I do not know what he said for I was not there, but I have been told that the audience went wild in applause and that scores of people, including our own Ambassador, went forward after the meeting to shake his hand. It was the climax of the convention.

As early as 1902 Professor Sedgwick was elected a member of the Advisory Committee of the U. S. Public Health Service, and for nearly twenty years he maintained this connection with national public health affairs. When after the war a reserve organization was created in this service, he was commissioned as Assistant Surgeon General. A few years ago he was made a member of the International Health Board, supported by the Rockefeller Foundation, and thus his interests became world-wide in their scope. Last year he went to England as Exchange Professor from the Massachusetts Institute of Technology to the Universities of Cambridge and Leeds, and on the eve of his departure a newspaper headline very fittingly characterized him as "Ambassador of Health."

During the past few days I have been reading over a list of the titles of the books and most important scientific papers which Sedgwick wrote between the years 1883 and 1921, about a hundred in number. If his minor writings had been included, the list would have been several times as long. Towards the end of his life he wrote less. Only a few weeks before his death he said to me: "I sometimes get sick of talking about

health; every Tom, Dick and Harry is now talking about it, and most of what they say is so exaggerated that it casts discredit on all of us who are trying to speak within the bounds of sanitary science." And I wish to take this occasion to express my own views that just as there is danger that scientific research may be organized to death, so there is danger that public health education be organized and legislated, propagandized and commercialized to the point of nullification.

There is a feature of it, however, the concerted movement, largely of the women, to improve the health of children, that strikes a responsive chord in all our breasts. We know that Professor Sedgwick's voice was to be uplifted in favor of this week's crusade.* His heart went out to the refugee children of France, and one of the most beautiful episodes of his life was associated with Chateau Lafayette, which he and Mrs. Sedgwick visited last summer, and to which he had hoped to return.

We come finally to Sedgwick's last great work in connection with the School of Public Health of Harvard University and the Massachusetts Institute of Technology. This school he helped to establish in 1913 and served as Chairman of the Administrative Board until his death. He delighted to see it grow; he delighted to see students coming to it from foreign countries,—from Italy, from China, from South America, from India and Siam, from Czecho-Slovakia, and from Mexico. Few people of Boston realize how solidly this little school has taken its place as a center of public health education, or how its example has been followed by other universities in America.

Nearly twenty years ago when Sedgwick joined the American Public Health Association, he was made a member of a committee on the Teaching of Hygiene and the Granting of the Degree of Doc-

*This address took the place of one which was to have been given by Professor Sedgwick, in inaugurating a Children's Week in Boston.

tor of Public Health. He always held the view that the public health service was different from the medical service, that a man could be an efficient health executive without being a doctor. His last important address, given at the 100th anniversary of the Medical School of the University of Cincinnati, was devoted to the subject of the education of health executives. He advocated what he called the Y plan, by which medical schools should have two programs, alike during the first year, but afterwards diverging, one towards the degree of Doctor of Medicine and one towards the degree of Doctor of Public Health.

His last act as a member of the Administrative Board of the School of Public Health, held December 19, 1920, was to assist in preparing a statement relative to the future of the school, planning for reorganization of its government and doing so at the sacrifice of his own position as Chairman, having in mind only the future good of the cause of public health education. In time to come Sedgwick's part in the organization of this school, which seems destined

to take its place side by side with the Harvard Medical School, will stand forth as one of his most constructive works.

And so we may sum up Professor Sedgwick's life as that of a great teacher, an interpreter of science, a wise counselor, an ambassador of public health. Friend of young men, loyal supporter of the Institute, patriotic citizen, a Christian gentleman, he will be greatly missed by all who were fortunate enough to know him.

On Sunday mornings I like to hear the student choir singing in the chapel. Sometimes the music rises and falls in varying melody until at the end it fades away as in a distance. At other times it pursues a simple motif, which grows in volume until it culminates in a burst of song, and, on a sudden, ceases. For an instant the air tingles and is still. But the memory of the glorious chord goes with us through the day "to charm, to strengthen, and to teach." Thus it was that Professor Sedgwick lived and died and stays forever in our hearts.

GEORGE CHANDLER WHIPPLE.

Harvard University, Cambridge, Mass.



BOOKS AND REPORTS REVIEWED

Exophthalmic Goitre and Its Non-Surgical Treatment. *Israel Bram, M. D., St. Louis: C. V. Mosby Co., 1920. Pp. 438. Price, \$5.50.*

This book of 400 pages deals in a fairly comprehensive way with the thyroid gland and with exophthalmic goitre. The theories of the physiology and the methods of study have been summarized in a general compilation, which is quite full, but which has the distinct disadvantage of not estimating the relative value of the investigating work of others. The literature on the thyroid gland is so full of poor work as well as good, that in order to be of service any book on the subject must differentiate most

carefully between the work which is true and that in which the conclusions do not bear close scrutiny. This is particularly true in work which deals with the inter-relationship of the glands of internal secretion.

Dr. Bram has done a very good piece of work in the chapters on the non-surgical treatment of thyroid disease, and these chapters are full of excellent advice and of suggestions which are both practical and beneficial. There are many who now think that this field of treatment should be used to far greater extent than has previously been done.

JOSEPH C. AUB, M. D.

Life. *A Study of the Means of Restoring Vital Energy and Prolonging Life.* By Serge Voronoff. Evelyn B. Voronoff, translator. New York: E. P. Dutton & Company, 1920. Pp. 160. Price, \$3.50.

This book treats of certain experiments and possibilities in the field of Opothrapy, particularly of the transplantation of testicles. There is an introductory discussion of internal secretions and of the causes of the senile decline. This is followed by an account of various cases of grafting the gonads upon the bodies of castrated or enfeebled animals with advantageous results. The rejuvenation of aged rams effected by testicular grafts has certainly been impressive. Corresponding benefits for the human being are confidently predicted. The author asserts that the testicles of apes will answer well for the purpose.

The presentation is semi-popular and rather scant. It is Gallic in its enthusiasm and picturesqueness, often uncritical but always stimulating. The translation leaves something to be desired. The reader may be puzzled by the frequent mention of "conjunctive cells" but he will discover in time that the reference is to cells of connective tissue.

PERCY G. STILES.



Cleveland Hospital and Health Survey. *Cleveland, Ohio: Cleveland Hospital Council. 11 parts, pamphlets. Pp. 1082. Price, \$5.50 plus postage; single parts 50 cents each plus postage.*

Private health agencies and civic organizations interested in promoting the public health have often led the way to advances or improvements in the conditions affecting the public health in American communities. The work of the International Health Board against malaria and hookworm, the Community Health and Tuberculosis Demonstration in Framingham fostered by the Metropolitan Life Insurance Company, and the public health surveys initiated and directed by the Oklahoma Public Health Association are examples of the activities of private health agencies. Recently Cleveland has had a thorough examination of the factors affecting the health of the community, and here too, the undertaking was fostered and conducted by a private health agency. On October 3, 1919, the Cleveland Hospital Council arranged for the survey.

The investigation was placed under the direction of Dr. Haven Emerson, and work was begun November 9, 1919. It was completed in July, 1920, and the report was submitted on September 22, 1920. The total cost of the survey, including the publication of the report is estimated at \$53,000.

The investigation was thoroughly organized and was conducted with adequate publicity. As a result, Dr. Emerson reports that many of the recommendations which were made have already been adopted. This survey also had the advantage of the co-operation of many important national organizations interested in different aspects of public health. Many local organizations in Cleveland and several state organizations in Ohio, also aided. In certain instances these various organizations contributed to the survey not only by loaning expert workers, but also financially.

The survey report consists of 11 parts. Part one deals with the problem of general sanitation. This includes a study of the water supply, sewage disposal, street cleaning, the collection and disposal of refuse, housing, flies and mosquitoes, and the smoke nuisance. It also includes a discussion of the population, topography and climate. Dr. Louis I. Dublin was in charge of the study on vital statistics.

Part two, which considers the organization and activities of the public and private health agencies, is an exhaustive and excellent diagnosis of the situation. The work of the various bureaus of the Cleveland Department of Health was studied and recommendations made for increasing their activities and usefulness. In addition the work of the Anti-Tuberculosis League, the Visiting Nurses' Association, the Day Nursery, the Hospital Council, the Associated Charities and other community organizations was reviewed. Recommendations were made in each case, and agencies for the prevention and relief of heart disease, and the prevention and cure of cancer were proposed.

Part three which deals with the problem of child health was under the direction of Dr. Josephine Baker. Part four, dealing with tuberculosis, was under the direction of Dr. Donald B. Armstrong. Part five, dealing with the venereal disease problem, was under the direction of Dr. W. F. Snow

and his associates from the American Social Hygiene Association. Part six takes up the problem of mental diseases and mental deficiency. This work was under the direction of Dr. Thomas W. Salmon. Part seven considers the problem of industrial hygiene and sanitation, and the employment of women and children in industry. This part of the survey was under the direction of Dr. Wade Wright. Part eight considers the problem of education in medicine, dentistry and pharmacy, and the practice of these professions. This part of the study was made by Dr. Haven Emerson. Part nine deals with the entire nursing problem and considers the education of nurses, the work of the private duty nurse, the work of the public health nurse and the organization of the various forms of nursing activity. This part of the survey was under the direction of Josephine Goldmark, who was assisted by Anne H. Strong, Elizabeth G. Fox, Anna M. Staehler and others.

Part ten is a long and complete report on the subject of hospitals and dispensaries. This work was conducted under the direction of Dr. Michael M. Davis, Jr. In addition to the ten parts of the survey report proper, a bibliography on surveys was also published as part 11. This is doubtless the most complete compilation of surveys which has ever been printed.

The survey is undoubtedly the most complete and the best that has ever been made. One of the features of the study was that specific recommendations for improvement were made in every phase of the investigation. The community therefore has a program for future work, based on the careful diagnosis of experts. Cleveland is to be congratulated for its far-seeing wisdom not only in having the survey, but also in placing the investigation in the hands of recognized experts, trained in the science of public health. Cleveland is also to be congratulated for its splendid community spirit and civic pride which made such a study possible.

MURRAY P. HORWOOD, M. S.



Nerves and the Man. W. Charles Loosmore. New York: George H. Doran Company, 1921. Pp. 223. Price, \$2.50.

One's first impression is that this book merely adds another volume to a large group

dealing with obvious matters of nerve hygiene. But it proves to possess a real distinction. This is partly due to an unusual grace of diction, but not less to the wise choice of material, the temperate judgment and the sane emphasis characterizing the whole. The author's personality makes an exceedingly strong and pleasing impression. He has large resources of scholarship and he draws upon them discreetly, sharing his treasures with his reader and preserving always an atmosphere of kindliness. Most refreshing is the specific nature of all his suggestions; he does not repeat platitudes and generalities but has the most homely and practical advice for every situation.

PERCY G. STILES.



Hygiene of Communicable Diseases. A Handbook for Sanitarians, Medical Officers of the Army and Navy and General Practitioners. Francis M. Munson, M. D., Lieutenant, Medical Corps, U. S. N. (Retired.) New York: Paul B. Hoeber. 1920. Pp. 793. Illustrated. Price, \$5.50.

This volume presents in a concise and readily accessible form the information now available concerning the epidemiology and the management of the communicable diseases.

The author's experience as a medical officer and sanitarian in different parts of the world has made him realize that in practical work one cannot read over long stories in order to refresh his memory on the fundamentals of sanitary science. Consequently, the value of the book has been greatly enhanced because of the fact that the various phases of communicable diseases have been separated (in Part II) into carefully headed sections and sub-sections so that the reader may obtain quickly the information sought on any particular major point.

The plan of the Committee on Standard Regulations of the A. P. H. A. has been followed out by the author.

There is very little material in the book that is new, but its methods of presentation thoroughly justify its existence. As all statements are supported by competent authorities, it becomes a trustworthy volume for the library of the physician and the health officer.

CLARENCE D. HART.

Scurvy: Past and Present. *Alfred F. Hess, M.D., Clinical Professor of Pediatrics, University and Bellevue Hospital Medical College, New York City. Philadelphia: J. B. Lippincott Company. 1920. Pp. 279. Illustrated. Price, \$4.00.*

Interest in scurvy has been stimulated the last few years as the result of a new and broader conception of nutrition. Also the World War tended to demand a renewed consideration of the subject which has been treated by Dr. Hess in a most literary manner.

The last comprehensive treatise on scurvy in English was published by Lind in 1772, and for the benefit of the clinician, hygien-

ist and biological chemist, the recent advances have been gathered into one volume.

Dr. Hess has not failed to take advantage of his favorable opportunity, and the book never lacks interest, from the picturesque material of the historical introduction to the closing discussion of the relation of scurvy to other diseases. It is readable throughout, and can be warmly recommended as an enjoyable as well as a profitable piece of medical reading for physicians and public health officials. All features of the disease are considered and a full bibliography assures the book a place in every good library.

CLARENCE D. HART.

ASSOCIATION NEWS

LIST OF NEW MEMBERS

Proposed for Election to the

A. P. H. A.

February 10 to March 4, 1921, inclusive.

Names of Sponsors are set in **Bold Face Type**.

Names of New Members are set in Light Face Type.

ALABAMA

George Hazlehurst, Montgomery.

F. W. Dershimer, M. D., Director, County Health Work, Montgomery.

CONNECTICUT

Stanley H. Osborn, M. D., Hartford.

W. C. Deming, M. D., Health Officer, Wilton.

J. R. Harris, M. D., New Britain, and Prof.

Frederic P. Gorham, Providence, R. I.

Abraham Thomas, Bacteriologist, Health Dept. Lab., New Britain.

GEORGIA

Mrs. Ada H. Latham, Atlanta.

Hortense E. Marion, R. N., Atlanta.

ILLINOIS

John Ritchie, Jr., Boston, Mass.

E. W. Kocher, Jr., Elgin.

IOWA

John Ritchie, Jr., Boston, Mass.

Jane Boyd, Social Worker, Tyler School, Cedar Rapids.

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Willis P. Butler, M. D., Lab., City & State Boards of Health, Shreveport.

MAINE

John Ritchie, Jr., Boston, Mass.

Maine Public Health Assn., Atten. Hilda L. Ives, Exec. Sec., Augusta.

MARYLAND AND DISTRICT OF COLUMBIA

John Ritchie, Jr., Boston, Mass.

Juan C. Segovia, M. D., Dir., Laboratory of San Salvador, Baltimore.

W. E. Hardenburg, Washington.

Louva G. Lenert, Asst. Sanitary Engineer, U. S. P. H. S., Austin, Texas.

MASSACHUSETTS

Elizabeth M. Fennessy, Boston.

Alice G. Bryant, M. D., Ear, Nose and Throat Specialist, Boston.

Engene R. Kelley, M. D., Boston.

Department of Public Health, Atten. of Miss Cole, Librarian, State House, Boston.

John Ritchie, Jr., Boston, Mass.

Federated Jewish Charities of Boston, Atten. of Mr. Ben Rosen, Boston.

M. P. Horwood, Cambridge.

Florence L. Meredith, M. D., Assoc. Prof. Hy-

giene & Dir. Dept. Women's Med. College of Pa., Philadelphia, Pa.

NEW YORK

Charles A. Bentz, M. D., Buffalo, and Prof. Fred-

eric P. Gorham, Providence, R. I.

Carl O. Lathrop, Bacteriologist & Serologist, Univ. of Buffalo Med. School, Buffalo.

Prof. R. A. Chaddock, New York.

Mrs. Lee Bernheim, Health Education, New York.

John Ritchie, Jr., Boston, Mass.

Frederick F. Russell, I. H. B., New York.

Gerald Morgan, New York.

NORTH CAROLINA

J. Howell Way, M. D., Waynesville.

J. R. Miller, M. D., Health Officer, Rock Hill.

RHODE ISLAND

Prof. Frederic P. Gorham, Providence, and Charles

A. Bentz, M. D., Buffalo, N. Y.

Carl O. Lathrop, Bacteriologist, Buffalo Med. School, Buffalo, N. Y.

Prof. Frederic P. Gorham, Providence, and J. R.

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Abraham Thomas, Bacteriologist, Health Dept. Lab., New Britain, Conn.

TENNESSEE

J. P. Kranz, Nashville.

J. Walter McMahan, M. D., City Health Officer, Alcoa.

TEXAS

A. W. Hedrich, Boston, Mass.

Manton M. Carrick, M. D., State Health Officer, Austin.

VERMONT

H. A. Elliot, M. D., Manchester.

J. S. Horner, M. D., West Pawlet.

WYOMING

C. Y. Beard, M. D., Cheyenne.

Homer E. Lathrop, M. D., Pres. Wyo. State Medical Society, Casper.

CUBA

Dr. Jorge Le Roy, Havana.

Francisco M. Fernandez, M. D., Member Leprosy Comm., Havana.

FOREIGN

John Ritchie, Jr., Boston, Mass.

Hernan Vigil & Co., Atten. of Mr. Hernan Vigil, Valparaiso, Chile.

STANDARDIZATION OF PUBLIC HEALTH TRAINING

Report of the Committee of Sixteen*

The committee of sixteen appointed by the President of the American Public Health Association under authorization of the Executive Committee, at the time of the annual meeting in New Orleans in 1919, respectfully submits the following report:

The committee has been duly cognizant of the belief of the Board of Directors expressed when the Committee was created, that the tasks of Public Health administration require a standardized professional training which will adequately prepare for positions in the public health field, and that the possession of such training should be indicated by duly recognized and accredited degrees. With this belief the Committee is in cordial agreement.

In approaching its task the Committee has first of all attempted to obtain a fairly complete conception of what is at present being accomplished in the training of men and women for administrative positions in public health. In order to secure a list of all the schools of public health now in operation in the United States and Canada, a letter was sent to each of the state and provincial health officers and we are happy to acknowledge the generous response to our request for information, practically every one of the officials having replied with promptness to our inquiry. Information in regard to the work of each school was then obtained by direct correspondence and the results, summarized in Table 1 below, present, we believe, a reasonably complete picture of the present status of public health education in North America. Many other institutions than those listed, of course, train chemists, bacteriologists, engineers, nurses and physicians who later enter the public health field, but we have been concerned only with schools which aid directly to prepare workers in the administrative aspects of public health.†

The variety of degrees and certificates granted in this field, as well as the diversity

of requirements for the same degree, are indicated in summary form in Table 2. This table clearly indicates the need for a movement toward standardization, such as the Directors of the American Public Health Association have asked us to consider.

It should be noted that a beginning has already been made in the task of standardizing degrees in public health in the shape of a conference called at Yale University early in 1919 which brought together representatives from certain Eastern universities particularly interested in the subject. Johns Hopkins University was represented by Dr. W. H. Welch, the Massachusetts Institute of Technology by Prof. W. T. Sedgwick, Harvard University by Dr. M. J. Rosenau, New York University by Dr. W. H. Park, and the University of Pennsylvania by Dr. H. F. Smyth; while Yale University was represented by a special committee from the Graduate School, including Prof. S. E. Barney, Prof. L. B. Mendel, Prof. L. F. Rettger, Prof. M. C. Winternitz, and Prof. C.-E. A. Winslow.

After very full discussion of the various points involved the following resolutions were unanimously adopted:

"1. That the degree of Doctor of Public Health (for which the abbreviation should be Dr. P. H.) for graduates in medicine should normally be awarded after two years of work done under academic direction, of which one year at least should be in residence; and that the requirements for the degree should include class work, practical field work, and an essay based on individual study of a particular problem.

"2. That the degree of Doctor of Philosophy or Doctor of Science in Public Health or Hygiene should be conferred upon students who hold the bachelor's degree from a college or technical school of recognized standing, and have satisfactorily completed not less than three years of graduate study. It is understood that this degree is based upon the fundamental sciences associated

*This Report was presented at General Sessions of the American Public Health Association at San Francisco, Cal., September 16, 1921. By vote of the meeting it was re-referred to the same Committee for final action at the next annual meeting.

Reprints of this Report may be purchased on application to the Office of the Association, 169 Massachusetts Avenue, Boston 17, Mass. Price 10 cents, with special figure for quantities.

†An earlier survey of the status of public health education was presented by Dr. E. C. Howe in the American Journal of Public Health for August, 1918; and partial data have been presented for several years by the Council on Medical Education of the A. M. A. (See *Journal of the A. M. A.*, August 7, 1920.)

PRESENT STATUS OF PUBLIC HEALTH EDUCATION

TABLE 1.
Data as of 1920

Degree	School Giving Degree	Time Required	Previous Training	No. Grad. Last Class	No. of Instructors
Gr. P. H.	Univ. of Cal.	4-year course	Equivalent to Junior standing	In all three courses 10	20
Gr. P. H.	Univ. of Cal.	2-year course	College of Civil Engineering		20
M. D. & Gr. P. H.	Univ. of Cal.	1½-year course	3½ years of medical course		20
Dr. P. H.	Univ. of Col.	2 years	Bachelor's degree from approved college	Courses discontinued in 1918	
M. S. in P. H.	Univ. of Col.	1 year			
C. P. H.	Univ. of Col.	4 years			
Dr. P. H.	Yale University	2 years	Medical degree	2	Staff
C. P. H.	Yale University	1 year	Bachelor's degree or 2 years' medical	2	
Ph. D.	Yale University		Bachelor's degree with medical and public health subjects		
Dr. P. H.	Chicago Hospital College of Med.	36-hour course	No recent data available.		
Dr. P. H.	Tulane University	Not longer than 3 years	Degree from approved medical school or equivalent Medical degree	Courses discontinued in 1918	
Diploma in Tropical Medicine & Hygiene	Tulane University				
Dr. P. H.	Johns Hopkins Med. School	2 years	Bachelor's degree and medical degree or combined med. and public health course—5 years.		49
Dr. of Science in Hygiene	Johns Hopkins Med. School	3 years	Bachelor's degree with physics, chem., biology, med. sciences	In all courses 35	49
B. of Science in Hygiene	Johns Hopkins Med. School	2 years	2 years approved four colleges, with physics, biology, inorganic and organic chemistry.		49
C. P. H.	Johns Hopkins Med. School	1 year	Degree in Medicine or in Arts and Sciences with training in physical and med. sciences.		49
Dr. P. H.	Harvard Medical School	2 years	Degree in Medicine	2	40
C. P. H.	Harvard & Technology	1 year	2 years approved medical school, Bachelor's degree, or special experience in P. H. work with physics, chem., biol., etc.	10	40
Dr. P. H. in Ind. Hygiene	Harvard Medical School	2 years	Medical degree		40
Ph. D.	Harvard University	3 years	A. B. or B. S.	None	Staff
C. P. H. in Ind. Hygiene	Harvard & Technology	1 year	Medical degree		40
B. S.	Mass. Inst. of Technology	4 years	Entrance exams.	8	Staff
M. P. H.	Detroit College of Med. & Surg.	1 year	Graduates of approved med. school	None	10
M. of Science in P. H.	Univ. of Mich. Med. School	1 to 2 years	Bachelor's or Medical degree	None	10
Dr. P. H.	Univ. of Mich. Med. School	2 to 3 years	Bachelor's or Medical degree	None	10
Dr. P. H.	N. Y. Univ. & Bellevue Hosp. Med. College	2 years	Graduates of approved med. school	None	30
C. P. H.	N. Y. Univ. & Bellevue Hosp. Med. College	Indefinite (May be by corres.)	Health officers or college graduates	25	30
Certificate	Syracuse Univ.	Special courses for health officers to meet requirements of New York State.			
Certificate	Albany Med. College	6 weeks corres. and 1 week attend.	Medical degree or experience as health officer		

Degree	School Giving Degree	Time Required	Previous Training	N. Grade Last Class	No. of Instructors
M. S. in P. H.	Ohio State University	1 year	Bachelor's degree or medical degree		
C. P. H. Nursing	Ohio State University	1 year	Trained nurse		
Dr. P. H.	Univ. of Pa.	2 years	Medical degree	1	19
Certified Sanitarian	Univ. of Pa.	1 year	Graduates of Arts or Sciences	4	19
M. P. H.	Univ. of Wis.	1 year	Medical degree	None	8
Dr. P. H.	Univ. of Wis.	2 years	For physicians	None	8
	McGill Univ., Montreal	Data not available			
	L'Université Laval, Quebec	Data not available			
D. P. H.	L'Université de Montreal	1 year	Medical degree		
D. P. H.	Queens Univ., Kingston, Canada	3 to 6 mos. in different subjects	Bachelor's degree and medical degree		
D. P. H.	Univ. of Toronto	1 winter and 1 summer	Medical degree from approved school		
D. P. H.	Western Univ., London, Canada	8 mos. winter and 3 mos. summer	Medical degree or 4th year complete men who elect D. P. H. for 5th year	None	

with hygiene and public health, including a knowledge of physics, chemistry, general biology, anatomy, physiology, physiological chemistry, pathology and bacteriology, in addition to the thesis and other usual requirements for the Ph.D. or Sc.D. degree.

"3. That the Certificate in Public Health should be granted for not less than one academic year of work to those who have received a bachelor's degree from a recognized college or technical school, or have satisfactorily completed two years of work in a recognized medical school, provided they have previously pursued satisfactory courses in physics, chemistry, general biology and general bacteriology.

"4. That the degree of Bachelor of Science in Public Health or Hygiene should be given for the completion of a four years' course, the last two years of which have been devoted to the fundamental sciences associated with hygiene and public health.

"5. That the authorities having the appointment of health officials be urged to give preference so far as possible to persons holding degrees or certificates in public health or hygiene."

It seems reasonably clear that the Yale conference has correctly interpreted the general trend of educational policy in recognizing two types of courses in public health:

one, a course of a single year leading to the Certificate in Public Health or the Master of Science in Public Health; and one, a longer course, leading to the Doctorate in Public Health, which should clearly constitute the highest degree in this special field.

It seems generally agreed that the requirement for the Certificate in Public Health or the Master of Science in Public Health should be the completion of the ordinary course for the Bachelor's degree, and there is reasonable agreement among the better institutions that the degree of Doctor in Public Health should require at least two years of work in residence. There is a marked difference, however, as to the question whether the degree of M.D. should be a prerequisite for the Dr. P. H. In other words, the matter may be formulated as follows: The first degree, or Certificate in Public Health, should evidently represent five years of work in addition to high school graduation, the general cultural work of the college with a beginning of specialization to be included in the first four years and the fifth year to be devoted exclusively to public health. It is believed by many that the degree of Doctor of Public Health should represent a six years' course in addition to high school, four years of college, with a beginning of specialization in biology, physiology and bacteriology, with two

years devoted to specialization in public health; while the conclusions of the Yale conference would require at least eight years from the high school, two years of college pre-medical work, four years in the medical school, and two years of graduate study.

The most serious defect in the whole system at present, however, lies in the fact that certain institutions give not only the Certificate in Public Health but even the Doctorate in Public Health for a course of a few weeks, while others require a period of almost three years, and it seems most desirable to effect some form of standardization in this field.

TABLE 2

Degree—	No. of Schools Giving Degree	Time Required
Bachelor of Science in Hygiene.....	1	2 yr.
Bachelor of Science in Public Health.....	1	4 yr.
Certificate	1	7 wk.
Certificate	1	Indefinite
Certificate in Public Health.....	3	1 yr.
Certificate in Public Health.....	1	Indefinite
C. P. H. in Industrial Hygiene.....	1	1 yr.
C. P. H. in Nursing.....	1	1 yr.
Certified Sanitarian	1	1 yr.
Diploma in Public Health.....	1	3-6 mos.
Diploma in Public Health.....	2	1 yr.
Diploma in Public Hygiene.....	1	1 yr.
Diploma in Tropical Medicine & Hygiene	1	1 yr.
Doctor of Philosophy in Public Health	2	Indefinite
Doctor of Public Health.....	1	36 hr.
Doctor of Public Health.....	7	2 yr.
Doctor of Public Health.....	1	2-3 yr.
Dr. P. H. in Industrial Hygiene.....	1	2 yr.
Doctor of Science in Hygiene.....	1	3 yr.
Doctor of Science in Public Health.....	1	3 yr.
Graduate in Public Health.....	1	1½-4 yr.
Master of Arts in Public Health.....	1	1 yr.
Master of Public Health.....	2	1 yr.
Master of Science in Public Health.....	2	1 yr.
Master of Science in Public Health.....	1	1-2 yr.

The final opinions of the Committee upon these problems may be summarized in order, as follows:

1. The Committee is agreed that the first degree in Public Health should be a Certificate in Public Health, a Master of Science in Public Health, or Master of Public Health, to be granted for one or two years of postgraduate work, following a college course in which the beginning is made in specialization along biological lines. If this undergraduate specialization has included adequate courses in zoology, botany, bacteriology, vertebrate anatomy, histology, embryology, physics, and chemistry, the degree may be granted for less than two years' work, but in no case is less than one year of work in residence to be required.

2. It is agreed by the Committee that the highest degree in Public Health should be a Dr. P. H., to be granted for not less than two years of work in academic residence. Students in this course must have either the Bachelor's or Medical degree or have satisfactorily completed two years in an approved medical school which requires two years of college or pre-medical work. For students holding the Bachelor's degree, who have not had in addition to the undergraduate subjects mentioned under paragraph 1, the equivalent of at least a full year's work in public health subjects, three years of study in academic residence shall be required. These requirements would make the Dr. P. H., like the M. D., attainable in six years of study after graduating from high school by those students who specialized in their undergraduate years. On the other hand, students who complete their medical course first will in eight years have gained both their Doctorate in Medicine and their Doctorate in Public Health. Some schools will no doubt continue to follow the lines laid down by the Yale conference and admit only medical graduates while other will continue to admit college graduates having proper preparation. This difference in policy seems at present to be unavoidable; and it need not be a serious one if the work actually required during the years of study for the Dr. P. H. degree be the same in either case.

3. The Committee believes that the attempt should be made to standardize the work of the one-year course in Public Health (whether the degree to be granted is called a Certificate in Public Health, a Master of Science in Public Health or a Master of Public Health) and the work for the Doctorate in Public Health, and to specify in part at least the work that should be completed before they are conferred.

4. The Committee does not deem it desirable to attempt to standardize any other Public Health degrees at this time.

5. The Committee believes that a Council of Public Health Education should be created by the American Public Health Association, similar in general functions to the Council on Medical Education of the American Medical Association. For the present at least the work of such a Council would necessarily be on a relatively modest scale

and could be conducted without the expense of elaborate administrative machinery.

Recommendations

1. The Committee therefore recommends the formal approval by the Association of the general standards for the Certificate, Master, or Master of Science in Public Health and the Doctorate in Public Health as described above.

2. The Committee recommends the adoption of an amendment to the Constitution creating a Council of Public Health Education similar to the Council on Medical Education established by the American Medical Association. For the attainment of this end the Committee recommends the following addition to the Constitution and By-Laws of the Association:

"The Council on Public Health Education shall consist of five members, to be appointed by the President and confirmed by the Executive Committee.

"Immediately after the adoption of this by-law, one member shall be appointed to serve for one year, one for two years, one for three years, one for four years, and one for five years. Thereafter one member shall be appointed each year to serve for five years.

"The Council shall organize, elect a Chairman and Secretary, and shall adopt such regulations for the government of its actions as it deems expedient. The Council shall have power to appoint in the name of the Association special committees to co-operate and assist in special phases of its work. It shall expend money or contract

financial obligations only as shall be authorized in writing by the Executive Committee.

"The functions of the Council on Public Health Education shall be:

1. To make an annual report to the Board of Directors on the existing conditions of public health education in the United States.

2. To make suggestions as to the means and methods by which the American Public Health Association may best influence favorably public health education.

3. To act as the agent of the American Public Health Association (under instructions from the Executive Committee) in its efforts to elevate public health education."

Respectfully submitted,

DR. A. C. ABBOTT

DR. MARK BOYD

DR. L. D. BRISTOL

DR. W. H. BROWN

DR. J. C. GEIGER

MR. SAMUEL A. GREELEY

PROFESSOR E. O. JORDAN

DR. ARTHUR I. KENDALL

DR. R. T. LEGGE

DR. W. H. PARK

PROFESSOR M. J. ROSENAU

PROFESSOR W. T. SEDGWICK

PROFESSOR C. E. TURNER,

Secretary.

DR. VICTOR VAUGHAN

DR. WILLIAM H. WELCH

PROFESSOR C.-E. A. WINSLOW,
Chairman.



REPORT OF COMMITTEE ON RETAIL DISTRIBUTION AND MARKETING OF FOODS

Presented to the Food and Drug Section, American Public Health Association, at San Francisco, Cal.,
September 16, 1920.

This period of reconstruction, with the world-wide scarcity of foods, places new responsibilities upon food officials in readjusting former methods and educating the public in the increasing necessity for food conservation. To emphasize the importance of the adequate distribution and the economical marketing of foods, it seems advisable to include in this report connecting phases which have a significant bearing on the subject.

Investigation has shown that the scarcity

and high price of certain staple foods have resulted in many instances in changes in the diet which are not conducive to maintaining the body at its normal efficiency. This tendency is very marked in the industrial centers, while the statistics from school authorities show that malnutrition in children of the medium and well-to-do classes is greatly on the increase, this being due not to insufficient food, but improper diet.

The Town of Brookline, Mass., has met this situation in a manner that might be

valuable to other municipalities. The authorities there have created the office of Municipal Dietitian and established a Food Center well equipped for demonstrating purposes. Instructions are given in selecting and purchasing foods, the proper diet for school children and adults, and what is extremely important to the health of the community, assistance is given in prescribing a dietary correction for diseases and cases of malnutrition.

It is a question if our manufactured foods are not too largely centralized and our production too largely specialized. With the greatly increased freight rates, high cost and scarcity of labor, a return to the use of community grist mills and slaughtering houses might prove a progressive rather than an obsolete factor in solving certain phases of the situation. While we realize the economical advantages in having our food manufactories in or near the centers of production and in specializing in the manufacture of certain products, it is apparent that in the cases of many commodities we have carried it beyond the point of practicability. When we find farmers shipping their hogs four hundred to six hundred miles to market and buying their dressed pork from local dealers, and large dairying districts where hardly a producer can be found who does not buy his butter from the local grocer, we have a situation that calls for constructive action rather than comment.

Known instances of profiteering in certain foodstuffs, and it should be added, accusations not founded on facts, have led to a general desire by health and food officials for Federal supervision or control of the food supply. The question should be carefully studied in the light of recent experiences, in order to ascertain if we really want Federal control of our food supply or Federal control of speculation. The latter would allow the unwritten law of supply and demand to function unhampered and would seem to be the most practical solution. When capital is so freely used to hold and re-sell food products, making fortunes for investors at the expense of consumers, as has been the case with sugar, it is time for such organizations as ours to take concerted and vigorous action to bring relief.

The standard of living in this country is the highest in the world. The choicest cuts

of meat, the flour from the white portion of the grain, and in fact the most perfect specimens of food are demanded, while other portions would be more economical and often more nutritious. The sharp increase in the salaries of wage earners has encouraged their tendency to maintain standards which, but a few years ago, only the rich could afford. Many by-products are not being utilized, for esthetic reasons only. A glaring example of this is the enormous loss of the food value of skimmed milk. In some milk-producing territories thousands of quarts daily are turned into the sewer, largely because efforts have failed to increase the use of cottage cheese. One large creamery company has but partially solved the problem by converting it into pork, but the muscle and tissue building properties of skimmed milk should be conserved for direct human consumption.

From a sanitary viewpoint a more rigid medical examination of food handlers under supervision of health officials should be insisted upon. The sanitary conditions, especially in the smaller manufactories such as bakeries and candy kitchens, also cellars and back-rooms where ice cream and other foods are made, are not as a rule as thoroughly supervised as in the larger plants. In some cities women's organizations have recognized this lack of store inspection and are taking steps to fill in the breach. The Women's Municipal League of Boston has just inaugurated a system of store and bake-shop inspection, and has entered upon the undertaking with the full approval of the City Health Commissioner, whose object is to learn from practical experience just how such a body of women may successfully assist already overburdened health departments. The most important feature of such work is the education of a large body of citizens in reasonably sanitary methods in handling and serving food. A woman's organization naturally reaches the domestic conditions which are seldom adequately covered by health officials, and it is evident that their work would be of great value when rightly functioned in coöperation with Board of Health. It is suggested that such organized work might well be applied in communities where Boards of Health are inactive or where no food inspection systems exist.

There seems to be a growing tendency

to inspect foodstuffs too largely for esthetic reasons. Retail store keepers are not allowed to expose carcasses in doorways or open windows, certain foods must be kept in dust-proof cases, stores must be kept clean and free from refuse, while rooms where food is manufactured and the materials of which it is composed often receive too little attention. This may please the taxpayer and is more or less necessary, but should be made an auxiliary for a more thorough-going inspection system founded solely upon the protection of the public health.

One of the most serious menaces to the public health in connection with our food supply is the insanitary condition existing in the rail transportation of milk and cream. Recent investigation in the New England states has shown practices and methods to be in use which should not be tolerated. Milk trains often hours behind schedule with the product waiting on platforms in the hot sun; lack of sheds or other protection for milk at receiving stations; insufficient ice with inadequate distribution in cars; no attempt at icing on short hauls; destruction and contamination of cans through misuse by railroad employees are some of the most habitual and serious defects noted. The economic loss from spoilage is enormous, and when we consider the care given other perishable but less susceptible foodstuffs purely for economic reasons, we wonder that refrigerator cars were not long ago adopted for the transportation of milk and cream in any considerable quantity over long hauls. In most of the larger cities the supply must necessarily come through interstate shipments, and consequently its care in transportation comes under the control of the Interstate Commerce Commission under its ruling of July 11, 1916, which simply states that the cars shall be "heated in winter and iced in summer," with no specifications as to outside temperature, amount of ice or heat to be used, or train schedules.

This Committee criticizes the Interstate Commerce Commission for its seeming indifference to the health of the public in the failure to provide adequate regulations to protect a product so easily infected, but so vitally essential in the conservation of human life.

This matter was brought to the attention

of the American Public Health Association last year. The International Association of Dairy and Milk Inspectors has done some constructive work, and has a representative at Washington whose business it is to present specific cases of insanitary conditions and spoilage to the Interstate Commerce Commission. We should go further than this and demand regulations that will adequately protect the product, with provisions for their endorsement, though it be necessary for us to carry our case to the President, Congress, to the American people.

In view of the fact that both retail and wholesale distributors of foods generally criticize the cash and carry chain stores as a detriment to the legitimate growth of the trade, the subject has been given consideration from the viewpoint of the consumer. Chain store systems are springing up with great rapidity, and it might be assuring to consumers at least, to state that in the case of reliable concerns we have not found any condition which can justly be criticized as unfair to competitors. They are based upon sound business principles and employ experts on special products as well as for advertising, displaying, and sanitary supervision. This insures more uniformity of quality in their products and service. Many of them manufacture their own food specialties, and as a rule, buy direct from the manufacturers, thereby saving immense sums which otherwise would go to the wholesaler and commission merchant. In addition they are so situated as to be able to buy when the market is low and have no overhead expenses for bookkeeping or losses from bad accounts at their retail stores. This makes it possible for them to undersell other merchants and accrues to the benefit of the consumer and also encourages thrift by requiring customers to buy only what they can conveniently pay for. We have, however, no criticism of the charge and deliver type of stores. These are necessary, for a large portion of consumers demand service for which they can afford to pay.

The North Dakota Agricultural Experiment Station has recently completed a very comprehensive investigation covering the 50 grocery stores in the city of Fargo. The report brings out apparently new economic phases of food distribution which might form a basis for a much-needed reform.

This investigation showed a range in operating expenses from 9 to 52% and implied that 20 well-managed stores were ample to handle the business of the 50 and could operate with an expense of not more than 7.66% for the charge and delivery, and 5% for the cash and carry stores. The report states: "We are firmly convinced that one of the main factors in the present widespread difference between prices received by the producer and what the consumer is forced to pay is lack of proper supervision by the government of the middlemen and the retailers."

We agree with the conclusions reached in the investigation conducted by Wm. N. Ingersoll, that 88 cents of every dollar spent by the consumer represents expenses, and the balance of 12 cents represents profit. Of the 88 cents the producer receives 37 cents; allowing 4 cents for necessary transportation and crating, the balance, amounting to 47 cents goes for additional profits to various handlers. The pertinent points are: (a) Is not this 47 cents an unwarrant-

able cost in the distribution of food? (b) How can it be eliminated or reduced to a minimum? (c) Should not the producers (tillers of the soil) receive a larger portion? (d) Is such an inequitable division of cost fair to the consumer? The economic conditions of our country demand that we should seek means to eliminate unnecessary profits and wastes in marketing, for we cannot hope to lower the cost of food or provide increased production under present conditions.

In conclusion, the Committee urges the American Public Health Association to take concerted action toward remedying the conditions outlined in this report. Let us put our hands to the plow and furrow deeply, preparing the soil for seed that will ultimately yield an adequate and safe food supply at reasonable prices, thereby promoting the health and welfare of the nation.

WILLARD E. WARD, Chairman.
MRS. WILLIAM MORTON WHEELER,
CHAS. P. MOAT.



CONVENTIONS, CONFERENCES, METINGS

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| April 5, Nashville, Tenn., State Medical Association of Tennessee. | May 2-7, Louisville, Ky., Kentucky Public Health Association. |
| April 5, Hackensack, N. J., New Jersey State Nurses' Association. | May 3-5, Columbus, O., Ohio State Medical Association. |
| April 12, Clarksburg, W. Va., West Virginia Health Officers' Conference. | May 4, Rome, Ga., Georgia Medical Association. |
| April 18-23, Cincinnati, O., Public Health Federation. | May 4, Brooklyn, N. Y., New York State Association of Public Health Laboratories. |
| April 19-20, Columbia, S. C., South Carolina Medical Association. | May 4-6, Wichita, Kan., Kansas Medical Society. |
| April 19-21, Montgomery, Ala., Medical Association of the State of Alabama. | May 5, Macon, Ga., Georgia Hospital Association. |
| April 19-21, New Orleans, La., Louisiana State Medical Association. | May 9-10, Indianapolis, Ind., Indiana State Health Association. |
| April 25, Pinehurst, N. C., North Carolina State Health Officers' Association. | May 9-11, Coronado, Cal., California State Medical Society. |
| April 25, Pinehurst, N. C., North Carolina Hospital Association. | May 9-12, Lincoln, Neb., Nebraska State Medical Association. |
| April 28, Boston, Mass., Massachusetts Association of Boards of Health. | May 9-12, Skirvin Hotel, Oklahoma City, Okla., Southwest Water Works Association. |
| May 2-5, Brooklyn, N. Y., New York State Medical Society. | May 10-11, Atlantic City, N. J., American Association of Physicians. |
| May 2-7, Louisville, Ky., Institute for Health Officers and Public Health Nurses. | |

- May 10-11, Pensacola, Fla., Florida Medical Association.
- May 10-11, Laurel, Miss., Mississippi State Medical Association.
- May 11-13, Des Moines, Ia., Iowa Medical Association.
- May 10-14, Topeka, Kan., Kansas State Nurses' Association and Kansas State Organization for Public Health Nursing.
- May 13-14, Boston Public Library, Boston, Mass., Massachusetts Tuberculosis League.
- May 16-17, Toronto, Ont., Can., Ontario Health Officers' Association.
- May 16-20, Winton Hotel, Cleveland, O., Ohio Hospital Association.
- May 17-19, Springfield, Ill., Illinois Medical Society.
- May 17-19, St. Joseph, Mo., Missouri State Medical Association.
- May 17-19, McAlester, Okla., Oklahoma State Medical Association.
- May 18, Toronto, Ont., Can., Canadian Anti-Tuberculosis Association.
- May 18-19, Hartford, Conn., Connecticut State Medical Society.
- May 19-21, Hot Springs, Ark., Arkansas Medical Society.
- May 23-26, Congress Hotel, Chicago, Ill., American Society Mechanical Engineers.
- May 24-26, Aberdeen, S. D., South Dakota State Medical Association.
- May 25-26, Concord, N. H., New Hampshire Medical Society.
- May 31-June 1, Boston, Mass., Massachusetts Medical Society.
- May, 1921, Copenhagen, Denmark, Second Regional Conference.
- May, 4th week, Pence Springs, W. Va., West Virginia State Medical Society.
- June 2, Providence, R. I., Rhode Island Medical Society.
- June, 3-5, Boston, Mass., Conference of State Sanitary Engineers.
- June 3-5, Boston, Mass., State and Provincial Health Authorities of North America.
- June 6-7, Boston, Mass., Association of American Industrial Physicians and Surgeons.
- June 6-7, Hotel Mizpah, Syracuse, N. Y., Central New York Public Health Association.
- June 6-10, Boston, Mass., American Medical Association.
- June 6-10, Boston, Mass., American Medical Editors' Association.
- June 6-10, Hotel Hollenden, Cleveland, O., American Water Works Association.
- June 8-10, Kentucky State Association Graduate Nurses.
- June 9, Burlington, Vt., Vermont Tuberculosis Association.
- June 13-17, New York City, National Tuberculosis Association.
- June 14-16, Toronto, Ont., Can., American Surgical Association.
- June 20-24, Detroit, Mich., American Institute Chemical Engineers.
- June 22-29, Milwaukee, Wis., National Conference of Social Workers.
- June 24-25, Eklo, Nev., Nevada State Medical Association.
- June 28-29, Bangor House, Bangor, Me., Maine State Medical Society.
- November 14-18, New York City, American Public Health Association.**



Have you made up your mind about going to New York, November 14-18, for the Fiftieth Annual Meeting of the American Public Health Association?

EMPLOYMENT BUREAU

HELP WANTED

Help wanted announcements will be carried free in this column until further notice. Copy goes to the printer on the 10th of each month for publication on the 20th. Mail to Boston office as early as possible.

In answering keyed advertisements, please mail replies separately to editorial office in Boston, Mass. In replying give age, professional training, salary requirements, previous positions held and three or more references.

Assistant Bacteriologist and Diagnostician for State Laboratory of Hygiene, Concord, N. H. Salary \$1,500. Address State Board of Health, Laboratory of Hygiene, Concord, N. H., giving age, references and experience.

Wanted: Resourceful man or woman under the age of forty, with training or experience in public health work for editorial and health educational activities in the East. Salary \$2,500 to \$3,500 to begin, according to experience and ability. Give age, past experience, and references. Names of qualified candidates from third parties of standing are welcome. Address 436, R. K., care of this JOURNAL, Boston address.

Wanted: Assistant Bacteriologist in State Laboratory in Pacific Northwest. Salary to be \$1,500-\$1,800, depending upon training and experience. Address 438, L. E. M., care of this JOURNAL, Boston address.

Wanted: Chemist who can do Bacterial Work; also an Assistant Operator capable of handling rapid sand filtration plant which we recently installed at West Palm Beach. Each job will pay \$125 per month, and transportation will be refunded after sixty days' satisfactory service. Address 439, H. H. H., care of this JOURNAL, Boston address.

POSITIONS WANTED

Position wanted announcements will henceforth be carried in this column. The charge is \$2 per insertion. Copy should be received at this office by the 10th of the month.

A woman physician, having eight years' experience in Public Welfare work of institution, three years' Hospital work and five

years' private practice, excellent in Venereal Clinic, would like a position as Public Health Physician, Industrial Work or Resident Physician in Hospital. Address 143, M. L., care of this JOURNAL, Boston address.

Health Officer, Eastern City, desires change in location. Particularly qualified in administrative work. Has also had considerable army sanitary experience. Address 144, H. R. J., care of this JOURNAL, Boston address.

Position wanted by graduate in public health. Five years' experience in city, state and federal health work. Now connected with national private health organization. Good executive, tactful, energetic speaker, writer, result getter. Address 145, T. A. J., care of this JOURNAL, Boston address.

Wanted: Appointment as director of public health education or publicity with state or city health department or private health organization. At present editor of successful state health journal and director of publicity for live wire state health association. State campaign manager for 1921 Christmas seal sale. Thorough knowledge of writing and editing, typography and advertising and sound understanding of public health work and ideals. Address replies to 146, W. K. R., care of this JOURNAL, Boston address.

Wanted: Full time executive and administrative public health position desired in Western city. Have a record for results. Five years in public health. B. S., M. D., Director A. P. H. A. Address 147, K. A. J., care of this JOURNAL, Boston address.

Wanted: Position as Laboratory Technician by young woman, has had two years' Army Hospital Laboratory experience, competent to handle clinical, bacteriological and serological work. Good references. Available June 1st. Address 148, N. M., care of this JOURNAL, Boston Address.

Wanted: Position as bacteriologist by man with five years' experience in bacteriology, water and milk inspections. Two degrees. Two years' teaching experience. Address 149, J. A. M., care of the JOURNAL, Boston address.

PUBLIC HEALTH NOTES

Abstracts by D. GREENBERG, M. P. HORWOOD, JAMES A. TOBEY and HOMER N. CALVER.

Influenza Studies.—In a group of studies of influenza Dr. Raymond Pearl discusses the explosiveness of the outbreaks and other matters. In the first of these studies, published in the fall of 1919, a definite and sensible correlation was established between the explosiveness of the outbreak of influenza in 1918, as measured by an epidemicity index, and the normal death rate from certain organic and chronic diseases. The present, more critical study, attempts to determine by multiple or partial correlations the chief factors for the great variation in explosiveness in 34 American cities. Now indexes are employed and every effort made to get critical quantitative measures of the variables involved.

In general the second study confirms the first; and the author believes that the critical refinements introduced fully meet all earlier criticisms. He maintains that the correlation between the death rate from organic diseases of the heart and explosiveness of the influenza outbreak is extremely significant. He points out that the normal death rate from pulmonary tuberculosis and the explosiveness of the epidemic, though sensibly correlated, is not markedly so; and that the death rates from cancer and typhoid fever show no sensible correlation. Moreover, of the six environmental and demographic variables considered only one, the latitude of the city, shows any correlation with the epidemic; and the significance of this is held to be doubtful.

A similar correlation between deaths from influenza and from cardiac diseases was also found, but not between it and acute nephritis, Bright's disease, or tuberculosis. The author concludes that the results indicate clearly that explosiveness of outbreak and total destructiveness are distinct but related epidemiological characteristics.—Raymond Pearl, *U. S. P. H. Reports*, Feb. 18, 1921.

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Pellagra and Income.—That pellagra varies inversely with the family income in the cotton-mill villages of South Carolina is the conclusion drawn after a three-year study by the U. S. Public Health Service. This is the first reported study in which the long-suspected relation of poverty and pellagra

is definitely measured. As the income fell the disease was found to increase and to affect more and more other members of the same family. As the income rose, the disease decreased and was rarely found in families that enjoyed the highest incomes, even though this highest was still quite low. Differences among families with the same incomes are attributed by the report to differences in the expenditures for food, intelligence of the housewife, and ownership of cows, gardens, etc. Differences among villages which were economically similar are attributed to differences in the availability and condition of food in local markets. A recent statement by one of the largest life-insurance companies in the United States indicates that the food standards of Southern wage earners must have improved remarkably of late, for the death rate from pellagra has fallen from 6.7 per 100,000 in 1915 to 2.3 in 1919.

†

Youth and Life.—This is the title of the new exhibit of the U. S. P. H. Service, which consists of 24 attractively illustrated cards, measuring 28x22 inches each. The exhibit, which is especially addressed to young women, is an appeal for physical fitness as the best aid to fulfilling the duties and enjoying the pleasures of life. The value of hygienic living and the need for plenty of exercise, fresh air, sleep, and proper food are emphasized. The function of the glands of the body, including the sex glands, are shown. Human reproduction is approached through a brief presentation of reproduction in plants and animals; and attention is called to the probable effects of sex misconduct (venereal diseases). Womanliness, motherhood, and home-making are extolled. This exhibit may be borrowed for special work from state boards of health or be purchased through the American Social Hygiene Association, New York City.

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Fighting Typhus at Its Source.—Typhus, the disease which has recently made its appearance in New York, is being fought today by the American Red Cross in one of its original strongholds, Poland, with five hospital trains consisting of ten cars each.

The hospital trains prove an exceptionally effective weapon against the epidemic which is reaping toll of thousands of lives among the Poles in the districts devastated by the Soviet armies in the summer campaigns.

Many thousands of typhus cases are found in the small villages and isolated farm cottages, far from any hospital, and proper medical attention is an impossibility. The five trains which are operated throughout the isolated districts of Eastern Poland were fitted up as a means of carrying on relief work which was abandoned while the Bolshevik drive was under way.

The trains have specific sections in which they operate and are often away from their base of supplies as long as two months at a time. The work is generally confined to small villages, for here are found the most needy cases. When the train reaches a village, it is side-tracked and a thorough inspection of the section is made and all cases of illness are given immediate treatment.

One car of each train is equipped as an operating room, another for dressings and examinations. The other cars include living quarters for the doctors and nurses and about four cars are loaded with relief supplies.—(J. A. T.)



Food Accessory Factors in Relation to the Teeth and Bones.—It has long been believed that dental caries is the result of the fermentation of carbohydrate food by the bacteria in the mouth with the liberation of acids. Recent experiments, however, have tended to contradict this theory and to point to the lack of proper and adequate vitamins in the diet as the cause of caries. Distinct cavities have been produced in the teeth of guinea pigs by controlling the diet. In those cases, the teeth also became loosened, the gums bled, and in some instances there has been a copious flow of pus. The condition was very similar to *Pyorrhea alveolaris*. The bones of the jaw and of the head also showed decalcification. The ribs and the leg bones also showed marked alteration. The guinea pigs were fed on fat free milk and rolled oats. About once every two or three days they would also receive a small piece of carrot and a small leaf of lettuce. When the animals began to show

the effects of the inadequate diet, the amount of green foods would be increased. In some cases it was necessary to feed the animals orange juice. Tooth destruction is considered to be one of the first signs of the lack of vitamins in the diet.—Dr. Percy R. Howe, *The Commonwealth*, July-Aug., 1920. (M. P. H.)



Progress in Tuberculosis Eradication Work in 1920.—At the end of the last calendar year there were in the United States more than 5,000 accredited herds free from tuberculosis. On June 30, 1920, there were 3,370 such herds and six months later, on December 30, there were 5,013, according to figures just compiled by the Bureau of Animal Industry, United States Department of Agriculture. During the six months' period there has been a marked increase in the number of herds that have successfully passed one test. On June 30, there were 16,599 such herds, and on December 30, 27,482. The department issued a report each month showing by states the number of herds that have been tested, the number of cattle that have reacted, and the number that have been found to be free from the disease.

Minnesota, with 731 accredited herds, leads all other states, with Wisconsin second with 496 herds, and Pennsylvania third with 425. During December, 1,447 herds in which there were 13,979 cattle, were tested in Mississippi. In Wisconsin 851 herds, having in all 15,411 animals were tested.—(J. A. T.)



Child Welfare in Roumania.—Nine child welfare stations have been established in Roumania as part of a nation-wide effort to cope with the alarming infant mortality which government records show is the most serious consequence of the war. There are 60,000 deaths annually among children under one year of age. Mortality among children under five years of age averaged about 50%, and in a few districts it is as high as 87%. Tuberculosis, dysentery, pneumonia, affections of the skin and blood diseases are the most seriously threatening diseases.—(J. A. T.)

STATE HEALTH NOTES— LEGISLATION

National.—The Sixty-sixth Congress passed into history on March 5, 1921. At the last minute the Langley bill, authorizing an appropriation of \$18,600,000 for hospitalization of former service men was passed and signed by President Wilson as one of his final official acts. The bills which were not acted on and which were of interest to public health workers include the Shephard-Towner bill for the protection of infancy and maternity, the Smith-Towner bill to establish a department of education, the Fess-Capper bill for physical education, the France bill for a national department of health, the McCormick bill for a department of public welfare, the bill for government regulation of cold storage and the bill restricting immigration. In order to be given attention, these measures must be reintroduced in the next Congress, the Sixty-seventh. The Shephard-Towner bill has been passed by the Senate and favorably reported in the House. The Smith-Towner bill would have made available \$20,000,000 for Federal aid to states for physical education, including health education and sanitation. The immigration bill was important in its possible effect in reducing the danger of the entrance of typhus into this country.

During a discussion of an amendment to the sundry civil appropriation bill concerning additions to the personnel of the U. S. Public Health Service, on February 8, Senator Smoot made an attack on the service. He states his desire for a thorough investigation of the Service and charged that the Surgeon General, while himself a honest and capable man, was surrounded by men with no respect for Congress and who had no mercy on the Treasury. The service was defended by Senator Robinson. On February 9 Senator King charged the U. S. Public Health Service with "a determination to take charge of the health of the people of the United States, to go into the states, and to discharge the duties and responsibilities which belong to the citizens and to local communities." He followed up this interesting statement by saying:

"The thousands of doctors and other employees of the Public Health Service, not content with what might legitimately come within the scope of Federal activity, are seeking to enlarge their powers and their

functions and their jurisdiction and their authority, and we find determined efforts made to enter the states and assume a paternal and bureaucratic guardianship over the people. There is a misconception of the power and authority of the general government: it is becoming a veritable Frankenstein; individuals, local communities and the states themselves are being devoured by this huge organism, whose appetite increases as its victories multiply. It is now proposed to have this Public Health Service look after our schools, local and state questions of sanitation, and the health of the individuals. There will be no place left under this oppressive federalism for the individual or the state. We are trying to Russianize this republic, and govern the people by a lot of petty tyrants and officeholders, who sit at Washington and send out their orders and edicts, by a million agents, to all parts of the land. There must be a halt to this grasping determination of the Federal government to take over the functions of the states."

Senator King had his way and an item of \$300,000 for investigating diseases of man and conditions influencing their spread was voted down.—(J. A. T.)



Public Health in Governor's Messages for 1921.—A bulletin of the Public Affairs Information Service (New York) for February 12, 1921, contains a digest of the messages of governors of 37 states to the legislatures in session. Those which include some reference to public health are as follows:

Arizona—Governor Campbell recommends appointment of full-time health commissioner and adoption of public health program for state.

California—Governor Stephens recommends a comprehensive investigation of the water resources of the state.

Delaware—Governor Townsend recommends the creation of a council of public welfare to consist of the governor and one member from each of the official administrative bodies in charge of health, educational, charitable, agricultural and child welfare and industrial work of the state.

Idaho—Governor Davis recommends a joint committee to investigate and report a plan of building and organization covering

a period of six years which shall secure improvements demanded in the state institutions for the feeble-minded. He recommends the continuance of the investigation of the state's water resources.

Illinois—Governor Small recommends that full-time health officers be provided for each county in the state and that every city should have local health organizations qualified to cope with disease, such organizations to have under their supervision trained visiting nurses and doctors and nurses for medical inspection in the schools. He comments on the conditions in hospitals for the insane and urges careful and considerate treatment and supervision of inmates and sufficient remuneration of employees as needed improvements. He recommends that the General Assembly study ways and means to provide proper care for the sick. He recommends that more rigid provisions be made for the prevention of venereal diseases and that steps be taken to abolish all places where such diseases have their inception.

Indiana—Governor Goodrich recommends legislation creating the office of county health officer with suitable provision for compensation and compelling every county in the state to appoint such an official. He urges in the event of the existing laws being pronounced invalid, enactment of legislation authorizing desexualization of inmates of various penal, correctional and benevolent institutions.

Massachusetts—Governor Cox recommends that elementary schools set aside fifteen minutes each week for safety education, and that the Commissioner of Education be authorized to prepare facts and methods of presentation for the use of the teachers. He recommends appropriations for further research in the endeavor to check the increase of feeble-minded and to reduce the number sent to correctional institutions.

Michigan—Governor Groesbeck recommends the free distribution of antitoxin and better supervision of health conditions in rural districts.

Nebraska—Governor McKelvie recommends regulation of the sale of butter substitutes; extension of temporary permits to cream station operators to a thirty-day period; continuance of the present law requiring the licensing of dairy herds; reduc-

tion in the amount of butter fat required in ice cream; enactment of an egg-candling law. He recommends that the state should encourage any practical raising of the standards of the professions that have to do with the public health, that annual renewal licenses should be required of all professions. He recommends state inspection of boilers and an extension of the safety laws to provide proper protection for workers in excavations, wells, etc.

Nevada—Governor Boyle recommends the appointment of a standing legislative committee which shall attempt to bring about the settlement of the Lake Tahoe storage question and to formulate a definite policy regarding further development of interstate streams heading in California.

New Jersey—Governor Edwards recommends any legislation that may assist in lowering the maternal death rate from child birth. He recommends legislation prohibiting the engaging in industrial occupation or work of any woman for six weeks before and six weeks after the birth of her child. He recommends the passage of laws empowering the State Board of Health to prevent the pollution of any watershed or stream which is a portion of or tributary to, a source of municipal water supply; to prevent the location of factories liable to produce objectionable waste matter on any portion of a watershed without a permit from the Department of Health; to prevent bathing at points where in its judgment such bathing will be in fact a substantial menace to people using the water.

New York—Governor Miller recommends discontinuance of the Department of Narcotic Drug Control and the transfer of its duties to some local authority.

North Dakota—Governor Frazier recommends that physical training in some form be compulsory for every pupil in the schools. He recommends that proper ventilation be required by law in every school, church and other place of public gathering.

Oklahoma—Governor Robertson urges enactment of a stringent dog law.

Pennsylvania—Governor Sproul recommends that laws governing drug traffic be strengthened, penalties increased and provisions rigidly enforced.

South Dakota—Governor McMaster urges revision of mothers' pension law to include

nursing, medical and hospital care for needy expectant mothers. He recommends appropriation to Child Welfare Board for publicity campaign to stimulate provision of suitable recreational facilities for children of the state.

Washington—Governor Hart recommends appropriation for the improvement of dairy herds at state institutions.

West Virginia—Governor Cornwell recommends the establishment of an institution for the care of the feeble-minded.

Wyoming—Governor Carey asks for larger number of dairy inspectors and increased authority to deal with insanitary dairies, stores or places where food is sold. He urges thorough revision of the public health laws and provision of full-time health officers. He urges adequate legislation and sufficient funds to combat venereal diseases. He recommends establishment of a sanatorium or hospital for treatment of tuberculosis.—(J. A. T.)

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District of Columbia.—Legislation for the control of venereal diseases in the district of Columbia will be sought from Congress at the forthcoming session by District Health Officer W. C. Fowler, who states that the absence of such a law in the district renders it difficult to accomplish much in the control of venereal diseases. Since practically every state in the Union now has such a law, the local health officials are hopeful that Congress will pass the bill for Washington.

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Maine.—The measure calling for an appropriation of \$101,000 for the purposes of the Maine State Department of Health has had its hearings before committees. It was supported by business men, representatives of women's organizations as well as by health associations, and no opposition developed. Viewing the matter from the industrial standpoint, E. M. Hamlin of Milo, Me., a prominent lumber man of the section, said: "Public health, like individual health, is the keystone to progress and success. The State of Maine needs the money asked for to develop public health work and, accordingly, to increase her own efficiency and success."

Massachusetts.—At a meeting of the Commissioner and Public Health Council it was voted to declare *Encephalitis lethargica* a disease dangerous to the public health and as such reportable. This action was instituted in order that further investigation might be made of the incidence, etiology and mode of transmission of this disease. A special pamphlet on the disease will be distributed to the physicians of the state. This condition, up to this time, has been voluntarily reported and about 75 cases have been investigated by the department. Of this group there were but five children, the remaining cases being adults. Of 28 cases cared for in certain of the Boston hospitals an increase in the cell count of spinal fluid has been noted carrying from 15 to 50 mononuclear. In this small group there has not been a single incidence of secondary infection or multiple cases in a household or any localized grouping.

The department is also circularizing the physicians of the state regarding typhus fever, calling to their attention the need of greater vigilance in the differentiation of the exanthematous conditions. While no great apprehension is entertained that typhus fever will be introduced into Massachusetts, the unusual increase of immigration of course makes this possible.

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New Mexico.—House Bills 79, 80 and 85 provide for amendments to existing laws to simplify procedure by the elimination of municipal health officers, concentrating all work in the hands of county health officers; increasing the marriage license fee to provide funds for the payment of sub-registrars for births and deaths, and clarifying the Public Health Law passed at the 1919 session. Senate Bills 47, 97 and 104 provide for the suppression of prostitution, prohibiting quack advertising, and assuring compulsory treatment of prisoners afflicted with venereal disease. House Bill No. 107 provides for the examination of male applicants for marriage. House Bill No. 137 is a red light injunction act. The probability of passing these laws is said to be excellent.

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Oklahoma.—The Women's Legislative Council of Oklahoma, representing six of the largest women's organizations of the state, has gone on record as favoring all

health measures advocated by the State Department of Health.

Among the bills already introduced and awaiting legislative action are: (1) Creation and maintenance of a Bureau of Child Hygiene and Public Health Nursing; (2) amendment to present Birth Registration and Quarantine Laws, attaching penalties for violation; (3) compulsory physical examination for persons engaged in preparation and handling of food; (4) establishment of county health fund to aid county health officers in their work; (5) provide expert medical and surgical attention for wards of state; also placing ten beds in State University Hospital at disposal of State Commissioner of Health; (6) create State Tuberculosis Commission, which shall have supervision over State's Tuberculosis Sanatoria, and (7) care and medical treatment of drug addicts who are indigent.



South Dakota.—Three bills have been introduced into the 17th session of the Legislative Assembly of the State of South Dakota. Senate Bill No. 32, introduced by the Committee on Public Health, provides for a preliminary examination of all persons who may hereafter desire to practice medicine, surgery, osteopathy or any other form of the healing art within the state; for the creation of a State Board of Preliminary Education, defining its powers and duties; provides compensation for the members thereof, and proscribes penalties for the violation of this act. The State Board of Preliminary Education shall include three members appointed by the Governor, educators of recognized standing from the personnel of state educational institutions, no one of whom shall be a physician, osteopath or engaged in the healing art. Any person who undertakes to practice medicine, surgery, osteopathy or any other form of healing art or who shall treat for compensation by any means whatever any disease of the body or mind, shall first present himself or herself to this Board. All persons shall be required to present evidence of at least four years' high school course, with two years in a college of liberal arts or its equivalent, and shall satisfy such Board that he or she is a person of good moral

character, with a diploma from some reputable and recognized school of medicine, surgery or osteopathy, or other school teaching the healing art, which has given a course of at least 32 months' standing over a period of four years, and embracing the study of anatomy, physiology, pathology, gynecology, obstetrics, chemistry, bacteriology, symptomatology, diagnosis, hygiene and sanitation. All applicants of the regular school of medicine shall have a diploma from a medical school the equal of the medical department of the University of South Dakota. Osteopaths and any other form of healers who are graduates of reputable professional schools and have had at least five years' professional experience in South Dakota or other states shall be exempt from the preliminary examination, as also shall be commissioned surgeons of the United States army, navy or marine hospital and United States Public Health Service in actual performance of their duties. Physicians or surgeons from outside the state in consultation with licensed physicians in the state do not require the examination, nor do Christian Scientists as such who do not practice medicine, surgery or obstetrics by the use of any material remedies or agencies.

House Bill No. 68 is for the purpose of regulating the practice of chiropractic, creating a Board of Chiropractic Examiners, and for the provision of examination and licensing of chiropractors. The Board of Examiners is to be selected by the Governor of the state from a list of six chiropractors to be recommended by the South Dakota Chiropractors' Association. The requirement for examination is a high school education or its equivalent, graduation by a chartered chiropractic school giving adequate courses in a great variety of subjects, including hygiene and public health, spinography, nerve tracing, philosophy, principles and practices of chiropractic, and requiring attendance for three semesters before graduation. The Board is to conduct written examinations. Chiropractic is defined by the bill to be "the adjustment by hand of the articulations of the human spine and other incidental adjustments according to the science of chiropractic."

House Bill No. 126 requires applicants

for a marriage license first to obtain from some one of a designated group of authorities a certificate of health and fitness, based upon a physical and mental examination and a history of family traits. The act will prohibit marriage within the state of persons unfit by reason of disease or mental defects, and prescribes the duties of certain county and state officials pertaining to the issue of marriage licenses. If residents of the state with intent to evade the provisions of the act go into another state and have their marriage solemnized with the intention of afterwards returning and residing in the state, and do so return and reside, they shall be guilty of a misdemeanor. The Director of the State Health Laboratory is required to cooperate with the various health officers and physicians in making the examinations of applicants.



Washington.—Maintenance of a free public school clinic in Seattle has been held to be illegal by a decision of the State Supreme Court, according to the *Seattle Municipal News*. The court ruled that expenditure of school funds for equipping a clinic and employing physicians, dentists and nurses for treating pupils is not authorized by the statutes of the state.



Wisconsin.—A bill pending in the Wisconsin legislature would bring all public health nurses—school, visiting, industrial, Red Cross, etc.—under the public health nursing law which requires supervision by the State Bureau of Child Welfare and Public Health Nursing and the use of standard forms and reports.

The county nurse law, enacted two years ago by the Wisconsin Legislature, which requires all counties to employ at least one public health nurse by July 1, 1921, and which has been complied with by more than half the counties of the state, is the subject of a bill in the Legislature which seeks to make its application optional with counties. Women of the state who were instrumental in having it passed are aroused by the emasculatory measure and have organized to keep the law intact.

STATE HEALTH NOTES—GENERAL

Alabama.—There is a definite effort in this state to establish a state home for diseased prostitutes, being backed by the State Board of Health, Federation of Women's Clubs, and most of the cities of the state. Sentiment among the public officials is favorable to this method of handling these people, because of the possibility of having enough together to form classes, and having a real rehabilitation program.



Illinois.—The State Department of Public Health, through its Division of Child Hygiene and Public Health Nursing, has recently called the attention of the medical profession to the epidemic poliomyelitis situation in Illinois. It points out that while little has appeared in the public prints since 1916 concerning this disease, it is nevertheless still present in epidemic form and that control measures are still desirable. In carrying out its plan for the after care of the victims of poliomyelitis through the 23 clinics established in as many cities throughout the state, the Division constantly comes into contact with patients of this crippling disease. It appears that about one case in three is recognized and reported. Physicians who desire information or assistance are invited to communicate with the Department or to bring their patients to any one of the established clinics.

All-day teaching clinics on the diagnosis and treatment of tuberculosis are announced for Murphysboro, Chester and Anna, Illinois. These clinics will be held during March and April with Doctors George Thomas Palmer of Springfield and J. W. Pettit of Ottawa in charge. In each case the program will be carried out under the joint auspices of the local medical societies and tuberculosis associations.

Dr. E. C. White of the Social Hygiene Division of the State Department of Public Health has delivered 31 lectures and shown motion picture films to 26 different local medical societies during the past few months. The films are technical illustrations of modern methods in treating gonorrhea and syphilis and are shown only to the medical profession.

Louisiana.—At the special meeting of the State Board of Health on the 15th, at which Governor John M. Parker presided, a committee was appointed to make report on persons now receiving morphine from the Dispensary. The personnel of the committee is not yet complete, but the resolution asked that there be a member each representing the U. S. Public Health Service, State and Parish Medical Societies, State and City Boards of Health. Dr. B. A. Ledbetter, representing the State Board of Health, and Dr. C. V. Unsworth, representing the State Medical Society, and Dr. J. J. Seeman, representing the City Board of Health, have been appointed.



Maine.—A Health League has been formed by the women of Colby University, said to be the first of its kind in the country. The Bangor Tuberculosis Association in reporting for the work of the past year notes that it has 53 children in its clinic, most of whom are living in fairly close contact with the disease, but under close supervision. Twenty-five children have been operated upon for tonsils and adenoids. Mary Jane is exciting interest in a good many different sections in the state. She is the demonstration doll and is dressed and undressed, bathed and handled to show the Pine Tree mothers how to handle their own babies. She excites a good deal of comment among the newspapers of the different communities, and the fact that she has a new set of "undies" is made the text of a number of interesting popular stories on infant care and welfare. The M. P. H. A. News, a nine by twelve monthly of eight pages, carries the good word of health procedure to the citizens.



Michigan.—The State Board of Health has suggested to the citizens the value of the regular spring cleaning. It gets rid of accumulations of dirt and dust which cannot be routed without some such systematic effort. Along the same line of thought the Department of Laboratories is urging the frequent renovation of bedding, noting that now with the continued shifting of population, with more families keeping "roomers" than ever before, the necessity for frequent cleansing process is greater than ever before.

New Jersey.—The Bureau of Child Hygiene of the New Jersey State Department of Health is carrying on active work in every county of the state, aided by part or complete appropriations in nine municipalities. Special efforts are directed to the establishment of community nurses and consultation stations, and supervision of boarding homes and midwives.

Seventy-nine nurses are following the state's plan of Child Hygiene work, making 105,437 visits to approximately 12,000 babies and 2,000 expectant mothers, and at the same time assisting in securing complete birth registration, reporting bad housing, insanitary conditions, and contagious diseases, and supervising the health of children of pre-school age. In a number of communities a program has been worked out, by which the same nurse supervises the child from conception to adolescence, thus eliminating duplication of visits to mothers, babies, pre-school and school children.

The work of the nurse in the home is supplemented by consultation or Baby Keep Well Stations, which have enlisted the co-operation of local physicians, and stimulate continuous interest of mothers by prizes for regular attendance and adherence to Child Hygiene rules, especially breast-feeding.

By an addition to the State Sanitary Code, the State Board of Health has been granted the power to license boarding homes for children. Investigations and surveys have been made, which have resulted in the closing of undesirable homes and maintenance of a certain standard for license.

Special emphasis has been given to the protection of the infant of the unmarried mother. An effort has been made to place the mother under supervision of a social agency or nurse in the community, for the care of the child's health and the mother's problems.

Supervision of midwives has been carried on in every county by special supervisors, who instruct them in the principles of Child Hygiene, obstetrics, sanitation and cleanliness, and visit them once a month. Efforts have been made to eliminate the unfit, dangerous and unlicensed midwife, and midwife associations have been formed which stimulate higher standards,

Nova Scotia.—Dr. F. W. Tidmarsh, after having taken a special course in conducting nutrition clinics in Boston, has been appointed to the same staff of the Massachusetts-Halifax Commission for the purpose of organizing nutrition clinics in the Commission's Health Centres in Halifax and Dartmouth. These nutrition clinics will be organized for undernourished pre-school age children and school age groups.

Dr. W. Alan Curry has accepted an appointment to organize Posture clinics for the Commission. To this service children will be admitted, after such handicaps as adenoids and tonsils have been removed, and the teeth rectified.

These services will be watched with the greatest of interest by the medical and nursing profession and by all public health workers.



North Carolina.—North Carolina now leads the entire United States with the highest birth rate in the Union according to statistics for 1920 just compiled by the State Board of Health. At the same time this state has one of the lowest death rates. Reports during the past year show a total of 83,966 births in the state, a rate of 32.8 per thousand. The deaths totaled for the same period 33,228, a rate of 12.9 per thousand. These figures do not include the stillbirths, which amounted to 4,171 for the year.

North Carolina has been exceeded in birth rate heretofore only by Utah, which in 1918 had a rate of 31.9. The rate for the entire registration area of the country the same year was 24.4. For the same year the death rate for the same area was 18.2.



Ohio.—To sell public health to the citizens of Cincinnati is the aim of a big health demonstration planned by Cincinnati's health agencies for the middle of October in Music Hall. The Exposition will be given under the auspices of the Public Health Federation and with the coöperation of the Board of Education, the American Red Cross, the United States Public Health Service, the Chamber of Commerce and of practically every other important health, safety and recreational organization in the city. The safety features of the Exhibit

are expected to be in charge of the newly organized Committee on Safety of the Chamber of Commerce. The Board of Health has not yet officially acted on the matter but it is practically certain that it will actively participate.

The Exposition will consist, it is planned, of exhibits of the Board of Health and the great majority of Cincinnati's health, recreational and safety organizations and its hospitals. There will be demonstrations on many phases of the work of all these agencies and in addition pageants, playlets and motion pictures in abundance. At least ten health organizations operating on a national scope will participate as will also several other departments of the Federal Government.



Oklahoma.—A two-day public health nurses' institute attended by about forty public health nurses from all parts of the state was held in Oklahoma City February 18 and 19, under the direction of the Oklahoma Public Health Association. These gatherings are held three or four times each year for public health nurses employed by all organizations, and have been found eminently successful, not only in imparting much useful knowledge and information, but more especially by giving the nurses a broader outlook on the field of public health, encouraging those who are laboring under difficulties in pioneer communities and giving the nurses an opportunity to meet each other and learn about the work going on outside their respective communities.

The institute consisted of lectures, round table discussions and demonstrations. Following is an outline of the program: "Development of Public Health Work in Oklahoma," Jules Schevitz, general secretary Oklahoma Public Health Association; "Coördination of Public Health Nursing in Oklahoma City," Miss Margaret Howard, superintendent Oklahoma City Public Health Nursing Association; "Health Program Before the Eighth Legislature," Dr. A. R. Lewis, State Health Commissioner; "Consultant Tuberculosis Service," Dr. L. J. Moorman, president Oklahoma City Anti-Tuberculosis Society, and "Health Crusade Tournament," Miss Henriette Hart, crusader executive, Oklahoma Public Health Association.

A school nursing demonstration was held under the direction of Miss Anna Stanley, school nursing supervisor of the Southwestern Division American Red Cross, and the nurses' round table was led by Miss Rosalind Mackay, state director of public health nurses. The meeting was featured by an inspection of the open air school and by an exhibition of health films, also a plea for recruiting of student nurses by Miss Ethel G. Pinder, director of division of nursing, Southwestern Division American Red Cross. Mrs. Bessie McColgin, only woman member of the House of Representatives, delivered an excellent address on women's and children's legislation.

The Rotary Club of Shawnee, Okla., has offered a prize of \$2,500 to be awarded to the city (20,000 or under in population) that is voted "the model city in the state for rearing the young." Many municipalities have already entered the "better cities" contest, there being but three ineligible because of too great population. Decision will be made Thanksgiving, 1921.



Texas.—Here are some clean-up hints that are promulgated by Health Commissioner Carrick for guidance in the coming clean-up week in Texas:

See that all rubbish is removed from back yard and surroundings.

Clean all windows and keep them open to fresh air and sunlight.

Don't forget what plenty of soap, hot water and sunshine will do.

Dry sweeping and dusting are dangerous practices.

Dispose of waste paper and other household rubbish regularly.

Do not forget the attic and remote places.

Do not tolerate dirty, broken walls and ceilings.

See that leaky roofs and defective plumbing are repaired.

Outside toilets should be screened from flies and vermin.

Vaults must be cleaned.

Top covering of shallow wells should be watertight.

Drain moisture from garbage before placing in can.

Provide a proper garbage can and keep the can covered.

Burn or bury garbage where no garbage collection exists.

Don't let milk bottles stand unwashed after use.

Keep loose manure in fly-tight boxes and remove at regular intervals.

Fight the flies by eliminating their breeding places.

No filth, no flies.

Inspect your roof gutter, cistern and fountains for mosquito breeding.

Drain, oil and screen against malaria carriers.

Cease keeping company with the rat; build him out of your home by placing metal laths between double walls.



Utah.—The courses in hygiene that are given in the public schools under the Department of Public Instruction, Division of Health Education, take up this month the laws of health, including cleanliness of person, clothes and the mind; the law of kindness, which exercises its effect upon the mind; good postures, in which correct positions both in sitting and standing are set forth with the admonition to stop when in the wrong posture and take the right one; and the bath. In the latter little lessons are outlined, including the facts that the bath is necessary to the individual for his own sake and for the sake of others. The essentials of a proper bath are stated for the benefit of the scholars.

The same department is undertaking the information of the public with reference to cancer. The facts are emphasized, that if detected early, cancer may be conquered by proper treatment, and further, that it is possible by avoiding certain things to prevent this disease by removing conditions that are known to precede it. Statistics of cancer and some simple bits of advice are given, with the request of the readers of the "Health Letter" to spread the information.



Vancouver.—In the far Northwest health matters are occupying a fair share of the space in the newspapers. A single issue of the *Vancouver Sun* discusses the question of hospitals and business, outlines progress of the Child Welfare Association, describes improved sewer construction in the district, and discusses the betterment of playgrounds

in connection with schools. With reference to hospitals and business, the *Sun* says editorially that the time has passed when the outlays of modern hospitals can be met with casual financing. There must be a complete reorganization, and business principles should be supreme in the management. The editorial takes up the vexed question of immigrant influence, and says boldly that the city cannot afford to lose money on cases originating outside of Vancouver. These must pay their own way, or the government must pay for them. "The hospitals themselves have fallen ill," says the editor. "The remedy is business. Selling at or below costs means bankruptcy. Hospitals as they are at the present time manage to secure only the unprofitable parts of the business. Inefficiency and bankruptcy are the certain results."



Virginia.—Practically every county in the state was represented at the recent Health Officers' Conference and valuable work was done in outlining programs for the coming year.

After experimental work for two years the program for the treatment of crippled children is now a fixture in the work of the State Board of Health. The effort began two years ago with the voluntary service of a single physician. Last year Governor Davis included in his budget the sum of \$10,000 annually for the work, and it is expected that the next legislature will increase this amount.

The testing out of the new law which makes the physical examination of school children compulsory seems to be satisfactory in Virginia. Dr. E. G. Williams, State Health Commissioner, emphasizes the absurdity of trying to provide proper courses for a child until his capacities, both physical and mental, have been determined. It is unjust to force the physically imperfect child to compete with healthy and strong neighbors. The examination has already resulted in the establishment of various clinics, dental and oral among them, which it is hoped may become permanent. Another development has been the demand for school nurses and the authorities have not thus far been able to secure trained nurses in sufficient number for the actual needs.

Wisconsin.—The next annual meeting of the National Conference of Social Work will be held in the city of Milwaukee from June 22 to 29, 1921. A program of especial value and interest to all those concerned in the subject of health will be presented at this meeting. The program for Division III, on Health, provides for five division meetings, at which the following subjects will be presented:

"Coöperation and Coördination in Health Work."

a. The National Council of Public Health—Organization and program.

b. National Council for Coördinating Child Health Activities.

c. How can voluntary organizations best coöperate with health officials?

"The Health Program of the American Red Cross."

a. The social significance of health centers.

b. Coöperative health plan of the New York County Chapter.

c. Public health nursing program and activities of the A. R. C.

"Social Significance of Child Health Work."

a. Education in health habits.

b. What state bureaus of child hygiene are doing to promote child health.

"Government Agencies in Their Relation to Health."

a. The United States Public Health Service.

b. The Children's Bureau.

c. Department of Agriculture, Extension service in home economics.

d. Bureau of Education.

"Certain Elements in a Health Program for Children" (joint session with Division I—Children).

a. The Undernourished Child—The significance of bringing him up to standard.

b. Where should this nutrition service next be centered; in the school room, in the child's own family, in the home?

c. How much more may be expected from medical service in the public schools?

Among those who will speak at these meetings will be: Mr. Sherman C. Kingsley, Dr. E. V. McCollum, Mr. Courtenay Dinwiddie, Dr. C. A. Pierce, Dr. Anna E. Rude, Dr. C. F. Langworthy, Mr. Willard S. Small, Mr. Philip Platt, Dr. Donald B. Armstrong and Mr. J. Mace Andress.

INDUSTRIAL HYGIENE AND OCCUPATIONAL DISEASE

Abstracted by Drs. E. R. Hayhurst and E. B. Starr.

Great Importance of Physical Efficiency in Certain Avocations.—When the United States entered the World War our British confreres gave us all the information they had on the medical problems of flying. They had learned much by hard experience in the early days of the war, and estimated that their air casualties during the first year of the war were as follows: Due to Germans, 2%; due to defective planes, 8%; due to physical defects of pilots, 90%. They then established their Air Medical Service and specialized on the care of the flier. The next year the 90% was reduced to 20%, and the following year to 12%.

In America difficulty was had in convincing some of the flying commanders, even, of the utility of using oxygen at high altitudes. Two flying commanders averred that they were just as fit at 20,000 feet as on the ground, and scoffed at the idea of using oxygen. A week later, however, these same officers, both having used oxygen for a long flight of more than three hours at an altitude of over 18,000 feet, were loud in their praise of the benefits it conferred, and made its use compulsory among their pilots and observers.—Abstracted by *Medico-Military Review*, U. S. A., Vol. 4, No. 3, Feb. 1, 1921, from *Air Service News Letters* (U. S.).



Industrial Fatigue.—If we define fatigue by its effects, since there is no satisfactory definition or test, we confuse it with mere boredom, and we neglect the fact that in certain conditions fatigue may temporarily be accompanied by increased output, just as may occur in the early stages of alcoholic intoxication. For these reasons output is not a satisfactory criterion, yet at present no better is available. None of the usual laboratory tests are really adequate for industrial application. Five different factors influence the output curves: (1) Fatigue, (2) Practice, (3) Incitement (or "warming up"), (4) Settlement ("Monday morning effect," or "not yet in the swing of work," which occurs among those who have spent the week-end restfully as well

as in those who have spent it in dissipation), and (5) "Sput" (divided into "initial" and "end" spurts, the first the result of freshness, the second the influence of the approaching end of the given job). Analysis of typical industrial curves of output in the light of these five factors, shows there is no evidence of undue fatigue, for example, in a man employed 8 hours a day in engineering work. In a similar work curve of 10 hours, we appear to see far clearer signs of fatigue; at all events, the efficiency of the 8-hour day is distinctly greater than the 10-hour day curve. In some processes a 10-minute rest in each 4-hour spell was found to increase the output by 26%. A certain amount of fatigue is inevitable and is not harmful if it can be dissipated by rest. Physiological fluctuations in efficiency occur quite apart from fatigue. A uniform output hour by hour, is neither natural nor desirable. To expect such goes contrawise to fundamental physiological and psychological principles. Some work best in short explosive bursts, others in longer, steadier spells. Great importance is to be attached to the rhythmicity of movement. The worker tends to demand interest and is not willing to become an automaton.—C. S. Myers, *Lancet*, Jan. 22, 1921, p. 205.



Occupational Hazards and Diagnostic Signs.—Copies of a pamphlet bearing this title may be obtained by writing to the Statistical Bureau, Metropolitan Life Insurance Company, 1 Madison Avenue, New York City. There is an alphabetical list of hazardous occupations arranged in column form, and for each hazard another column gives the symptoms, condition or disease which are looked for, and a third column the industries and trade processes which offer such exposures. An invitation is extended to industrial physicians and surgeons to note additional hazards and hazardous occupations and further symptoms which are not included in the pamphlet for any of the hazards named. A blank for such purpose comes with the pamphlet; also a stamped, addressed envelope.

Industrial Lighting.—A chief factor in industrial lighting is insufficient light. In the coal industry, for example, we think of coal mine accidents as resulting mostly from falling slate or gas explosions, whereas statistics show that out of each one thousand men employed underground, there are eleven serious or fatal accidents a year, and out of the same number of employees working above the ground there are five serious accidents per year. The excess of six accidents can be very largely charged to a greater insufficiency of light below ground. Out of the 25,000 serious industrial accidents in the United States per year at least 15 per cent are chargeable to poor illumination. One does not often think about the fact that the intensities of artificial light in industrial plants are much below the daylight intensities. Daylight in factories runs from 4 to 50 foot-candles; artificial lighting from 4 to 12 and sometimes down to $\frac{1}{4}$ foot-candles. Stairways and places where accidents are the most prevalent are usually the most poorly lighted places. In general there are two accidents under artificial lighting compared to one accident under daylight conditions; 79 percent of manufacturers interviewed give lighting as a reason for increased production; 71 percent say good lighting decreases spoilage; 59 percent say that good lighting is followed by fewer accidents. "The total cost of accidents, the total disability payments, and the total lost time of industrial operators in the United States amount to more than the total cost of artificial illumination." In regard to keeping lighting fixtures cleaned there is a slogan as follows: "Water is cheaper than Watts." In a very dirty building, after three weeks of neglect, the illumination may drop from 4.0 to 2.0 foot-candles. The cost of good lighting is perhaps one-tenth of 1 per cent expressed in the evaluation of the working man and his possible output. Two minutes per day added to the workman's output will equal his share of the cost of lighting for the entire day.—Samuel G. Hibben, *Bulletin New York State Industrial Commission*, Albany, December, 1920, Pages, 50-51.

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Industrial Lighting in Relation to Health and Safety.—The writer gives a brief history of the development of industrial lighting before the Congress (In Industrial Hygiene) in Brussels covering the work in Belgium, France, Great Britain and the United States. The British Interim Report in 1915 indicated

that "adequate lighting should fulfill the following requirements:—

(a) Sufficient illumination on the work.

(b) A reasonable degree of constancy and uniformity over the necessary area of work.

(c) The placing or shading of lamps so that the light from them does not fall directly in the eyes of an operator when engaged on his work or when looking horizontally across the room.

(d) The placing of lights so as to avoid the casting of inconvenient extraneous shadows on the work."

"The results of inadequate illumination are damage to eyesight and personal health, various forms of domestic insanitation, accidents in factories and workshops, often accompanied by diminution in output of work and lack of discipline. Bad lighting affects output unfavorably, not only by making good and rapid work more difficult, but by causing headaches and other effects of eyestrain." There are now in the United States six states which possess codes in industrial lighting. Experience in New York State shows that of 3,185 orders issued for improvements in lighting during the period August, 1918, to February, 1919, 1,566 compliances had already been carried out—a favorable result for the first seven months' operation of this new measure. The British Home Office found that almost invariably the accident rate was higher by night, the average increase being 29% for all forms of accidents and 71% in the case of persons falling—a form of accident for which inadequate lighting is very apt to be responsible. In the case of docks, where this type of accident is very common, the increase was as much as 102%. The Commonwealth Edison Company of Chicago recently made a survey of lighting conditions in 93 factories. First the factories ran with the existing illumination and then with higher values. In one case the improved illumination resulted in an increased output varying from 8 to 27 percent in different departments, and, on the average, it was concluded that an increased cost of lighting amounting to not more than 5 percent of the pay-roll would lead to an increased production of quite 15 per cent. Seeing that the cost of lighting in general forms less than 1 percent of the amount paid in wages it can readily be seen how easily the cost of improved lighting may be more than compensated by improved production. The author, in summing

up, emphasizes the desirability of *international agreement on regulations on factory lighting in various countries*, and of coöperation for the carrying on of further researches in all relations, especially between lighting and health, safety and efficiency.

The general consensus of opinion strongly favors the view that inadequate lighting is one of the chief causes of miners' nystagmus and that in addition to the Illuminating Engineering

Society, the Council of British Ophthalmologists and the Royal Society of Medicine should coöperate.—Leon Gaster, *Jour. of State Medicine*, Vol. XXVIII, No. 9, Sept., 1920, pp. 274-282.



Fatigue and Efficiency in the Iron and Steel Industry.—This report is based on investigations of numerous iron and steel works situated in England, Scotland and Wales, where all the workers are now on 8-hour shifts, though in certain districts they were on 12-hour shifts until recently. It shows that as a result of the reduction of hours, the output from the open hearth steel furnaces went up 2 to 9%, but that there was no change in the output from the rolling mills or the blast furnaces. The timekeeping of the blast-furnace men, however, improved, and it was found possible to reduce the number of men required to run the furnaces.

The effects of fatigue were specially seen in the blast-furnace men on Sundays, when they worked a 16-hour shift, for their rate of charging the furnaces (by hand) was 5 to 10% less than on weekdays when they worked 8-hour shifts. Again, the rate of charging was 16% less in the summer than in the winter, and seasonal variations in the output of the heavy workers were likewise observed at the steel furnaces, the puddling furnaces and the rolling mills. Suggestions are made for reducing the heaviest work of all, namely, that of the steel melters when fettling (i. e., mending) their furnaces.

Sickness and mortality data relating to 24,000 iron and steel workers were tabulated for a six-year period. Men on the heaviest work experienced the most sickness, the steel melters showing 23% more than the average, the puddlers 20% more, the tinplate mill men 12% more, and the rolling mill men 8% more. The excess of

sickness shown by the puddlers was due entirely to rheumatism and respiratory diseases. The steel melters showed 26% greater mortality than the average, and the blast-furnace men a higher mortality still.—Abstracted by *Monthly Circular*, from Industrial Fatigue Research Report No. 5, Ministry of Health, Great Britain.



Creation of Service of Industrial Hygiene at International Labor Office.—A Service of Industrial Hygiene has recently been created as part of the International Labor Organization, to study the questions which the Commission on Unhealthy Processes of the first International Labor Conference at Washington in 1919 brought to the special attention of the International Labor Office. These questions include protection against infection by anthrax in industry; prohibition of the use of white lead in painting; prohibition of the use of nitrate of mercury in the process of "carrotting" rabbit fur; and the prevention of poisoning by carbon monoxide gas and by lead. The first two questions, relating to anthrax and white lead, have been placed on the agenda for the 1921 conventions to be held at Geneva in April, and the Service of Industrial Hygiene is not engaged in collecting information on the two points.

Aside from the definite tasks assigned to it, the Service of Industrial Hygiene will study the general problems of the health of the worker, industrial fatigue, and feeding. Its program of action is thus summarized in the International Labor Office Bulletin: (1) The conduct of a general and permanent inquiry into unhealthy processes with a view to the preparation of draft conventions and recommendations for submission to General Conference, and (2) generally to deal with everything relating to industrial hygiene by the coördination of the provisions common to the various national legislations and the preparation of international regulations.

Dr. Luigi Carozzi, formerly head of a service at the Milan clinic, lecturer on industrial pathology at the Rome University and medical inspector of labor at the Ministry of Industry and Commerce, is Director of the new service.—*Monthly Review of U. S. Bureau Labor Statistics*, December, 1920.

PUBLIC HEALTH LABORATORY NOTES

Abstracted by Arthur Lederer, M. D.

Hemolytic Streptococcus Carriers.—The incidence of carriers at any army post during peace times was not greater than that in civil life. New recruits spending a short period of time at this army post did not show an increase in the carrier ratio. Pathologic conditions of the pharynx, such as hypertrophied tonsils, tend to prolong the state of a hemolytic streptococcus carrier. The classification of streptococci, according to their reactions on the sugars, is believed to be of great importance from the standpoint of epidemiology, and should be done in every case in which a more thorough knowledge of the streptococci isolated from patients, carriers of the environment if desired. It is believed that streptococcus infections cannot be explained on the basis of contact alone. Streptococci were found to be distributed generally in the air of a ward containing patients with positive throat cultures. The presence of these organisms in the air probably explains the ease with which streptococcus infections take place. Their number is also probably influenced by the amount of dust in the room. This reemphasizes the necessity of measures of allaying dust and of keeping patients with negative throat cultures in separate wards.—J. W. Walker, *Jour. Inf. Dis.*, 27, 618 (1920).

Wassermann Test in Patients Affected with Malaria in the Tropics.—In a heavily infected malarial country a positive Wassermann reaction cannot be considered as due to syphilis if there is no special evidence in favor of syphilis. If after a good quinine treatment a positive Wassermann reaction becomes negative or distinctly weaker, without antisiphilitic treatment, probably the positive Wassermann was a sequel of malaria. Especially in natives a positive Wassermann reaction does not permit of conclusions without careful consideration; a positive result with unheated serum is in such cases almost useless, a negative result of course will be as valuable as elsewhere. In natives, a Wassermann test conducted with heated serum within

three months from an attack of malaria is of little value for the diagnosis of syphilis. To consider a test made not more than a week after the attack as advised by Sutherland and Mitra is certainly wrong.—F. H. Hehewerth and W. A. Kop, *Jour. Hyg. (London)*, 19, 277 (1921).

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The Colloidal Gold Reaction in the Cerebrospinal Fluid.—The colloidal gold reaction originated by Lange in 1912 appears to indicate the amount of globulin in the cerebro-spinal fluid, and indirectly the amount of albumin. Although the reaction has some clinical value, it must not be forgotten that it is always accompanied by a cerebro-spinal pleocytosis and an increase of globulin. Its advantage consists in its being the last reaction to persist after intravenous or intrathecal treatment, and also in its appearing earlier than the Wassermann reaction. The colloidal gold reaction, however, is not superior, either from a diagnostic or prognostic point of view, to cytodiagnosis and the albumin reaction described by Ravaut.—Ponselle, *Ann. de Derm. et de Syph.*, No. 8, 1920; *Brit. Med. Jour.*, No. 3129, (1920).

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Practical Methods in the Purification of Obligate Anaerobes.—The author calls attention to the relatively recent appreciation of the failure of some early investigators to secure unquestionably pure cultures of obligate anaerobes. The methods of initial culture and selective enrichment are discussed and certain observations are noted on the elimination of aerobic contaminants through selective heating and selective cultivation. Certain limitations on cultural methods of isolation, especially surface methods, are suggested, and a critical review of the present status of surface culture methods, deep culture methods and microscopic methods of isolation, is given. It is concluded that the method of isolation by deep cultivation in glucose agar is most practical.—Ivan C. Hall, *Jour. Inf. Dis.*, 27, 576 (1920).

Leukemia: Type Diagnosis by Oxydase Method of Blood-Staining.—The oxydase method is best suited for the differentiation between the large lymphocytes and myelocytes. The solutions required are:

Solution A.

95% alcohol 9 parts
Formaldehyde Sol. (40% gas) .. 1 part

Solution B.

Alpha-naphthol
(Merck's reagent) 1 gram
40% alcohol 100 cc.
Hydrogen peroxide 0.2 cc.
(Must be fresh)

Solution C.

Pyronin 1 gram
Anilin 4 cc.
40% alcohol 96 cc.

Solution D.

0.5% solution of methylene blue
(Gruebler's BX)

The films should be fixed by covering with solution A. After two minutes this is washed off with water and the film flooded with solution B. This is washed off and the film is allowed to remain in a dish of running water for 15 minutes. It is then dried and stained for two minutes with solution C. This is washed off with water and solution D is poured on and allowed to remain for 30 to 60 seconds. After washing with water the slide is blotted and mounted in neutral balsam. All myeloid cells, polynuclear myelocytes, transitional and myeloblasts, will show blue granules, while lymphocytes and lymphoblasts will not. Solution B deteriorates very rapidly and must be made up fresh.—George L. Lambricht, *Am. Jour. Med. Sciences*, Vol. 161, 209 (1921).

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Simple Method for the Removal of Natural Amboceptor from Human Sera.—This method for the removal of natural amboceptor from the patient's sera has been applied to 10,000 Wassermann tests and in the author's opinion meets the requirements of laboratories performing large numbers of tests daily. The method is based on the well-known affinity of sheep-cells for anti-sheep amboceptor, and consists of adding packed sheep-cells to inactivated serum in the proportion of one drop per cc. of serum, and permitting the extraction to take place for 10 minutes at room temperature. In applying this simple procedure, the follow-

ing factors are to be considered. The packed sheep-cells employed are part of the same cells which, after proper dilution, are used in making the sheep-cell suspension for the Wassermann tests. A quantity of sheep-cells are washed daily with a view of having several extra cc. of packed cells for the absorption of amboceptor. The drop employed is somewhat smaller than ordinary size, comprising 25 to 30 drops per cc.—R. L. Kahn, *Jour. Lab. Clin. Med.*, 6, 218, (1921).

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Gonococcus Types.—The results of absorption experiments without question prove that the gonococci are a collection of organisms that falls into distinct clear-cut immunologic types, having very little relation with one another. The agglutinins of a serum produced by one type cannot be absorbed by any of the strains forming the other types no matter how highly the serum is diluted and how much of the growth used. Thus strain 1 serum was diluted 1-250 and 1 cc. absorbed by the growth of two large slants of selected heterologous strains. None of them were able to absorb any of the agglutinins. Yet the homologous strains absorbed them completely in one-half and one-third of that amount. The 85 strains included in this investigation fell into six very distinct serologic types. By far the largest number of the strains belonged to either type 1 or 2. The Torrey strains from three laboratories established themselves as members of type 1, while of the ten strains received from another laboratory only 4 fell into this type. The remaining 6 formed the C race of type 2.—John Hermanies, *Jour. Inf. Dis.*, 28, 133, (1921).

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Experimental Transmission of Yellow Fever.—Yellow fever has been transmitted experimentally to the guinea-pig by injecting intraperitoneally the blood of patients taken during the third or fourth day of illness. Pure cultures of *Leptospira icteroides* have been obtained with the blood either from yellow fever patients or experimentally infected guinea-pigs, by using the culture medium and technic described by Noguchi. The organism isolated in Vera Cruz has the same characteristics as that isolated by Noguchi in Guayaquil.—P. Perez Grovas, *Jour. A. M. A.*, 76, 362, (1921).

Official Control of the Wassermann Test in Germany.—The "Verstaatlichung" of the Wassermann reaction went into effect Jan. 1, 1921. According to the new regulation, physicians who specialize in examination of blood by the Wassermann technic will have to obtain a special permit to do so. They will be required to do the work under certain special conditions and use for the test only extracts which have been officially standardized. The official standardization is done at the Institute für experimentelle Therapie at Frankfurt a. M., of which Prof. W. Kollé is in charge. These restrictions apply only to physicians who do a laboratory business with specimens sent in from outside. They do not apply to the test in private practice or in public institutions.—Anon., *Jour. A. M. A.*, 76, 255, (1921).



New Serum Reaction in Syphilis.—The test as evolved consists merely in placing with a pipette 1 cc. of clear serum at the bottom of a test tube, adding two drops of commercial formalin, shaking to obtain a good mixture, and leaving the tubes stoppered with cotton-wool at the room temperature for 24 to 30 hours. The reading of the reaction is easy; if positive the mixture becomes more or less solid, clear, and jelly-like; in negative reactions it remains perfectly fluid. In this way the authors have tested over 400 serums, and compared the results with those obtained in the Wassermann reaction. Mixtures of positive Wassermann serums always give positive formalin reactions, and mixtures of negative Wassermann serums always give negative formalin reactions. In separate cases the results of the Wassermann reaction and this formol-gel reaction accord in 85% of instances. The authors state that where the two reactions disagreed they were unable to discover which was the more accurate, as the true diagnosis in these cases was unknown. However, in certain cases, such as early syphilis, clinically certain, where the Wassermann reaction failed, the formol-gel reaction gave positive results. Preliminary inactivation of the serum is unnecessary, nor does it modify the reaction in any way to incubate the mixtures.—Gaté and Papacostas, *C. R. Soc. Biologie*, November 20, 1920; *Brit. Med. Jour.*, No. 3133, (1921).

Presence of Spirochætes in Lymphatic Glands.—The author carried out 89 punctures of the lymph glands in 83 syphilitic patients to determine the presence of the *Spirochæta pallida*, with the following results: Of 24 patients in the primary stage, 20 showed spirochætes in the regional lymphatic glands. Of 18 patients at the beginning of the secondary stage, only 7 showed spirochætes in the puncture fluid. Of 27 cases in the late secondary stage, 20 were negative; 4 cases in the tertiary stage were also negative. Of 14 cases in the latent stage, 3 were positive and 11 negative. It is thus obvious that in the early stage of syphilis the *Spirochæta pallida* is very frequently present in the regional lymph glands, and even in the late secondary stage it is often found, though with diminished frequency. The duration of the disease in such late secondary cases was from four months to two years. In the latent stage spirochætes were found as late as the third year of the disease.—Fruehwald, *Wien. klin. Woch.*, November 11, 1920; *Brit. Med. Jour.*, No. 3133, (1921).



Modification of Stain for Diphtheria Bacilli.—The formulas of the solutions as modified are:

Solution 1

Toluidin blue	0.15 gm.
Methyl green	0.20 gm.
Acetic acid (glacial)	1.00 cc.
Alcohol (95%)	2.00 cc.
Water (distilled)	100.00 cc.

After standing for one day, the solution is filtered and is ready for use.

Solution 2

Iodin	2 gm.
Potassium iodid	3 gm.
Water (distilled)	300 cc.

The solution is ready for use as soon as the iodine is entirely dissolved. Smears are made on slides or cover glasses and fixed by heat in the usual manner; stained with solution 1 for one minute; washed with water; dried with good absorbent filter paper; stained with solution 2 for one minute; washed, and dried with filter paper. The granules of diphtheria bacilli are stained black; the bars, dark green, and the intermediate portions, a light green. The contrast is marked. The stain has been very serviceable in detecting diphtheria bacilli.—Henry Albert, *Jour. A. M. A.*, 76, 240 (1921).

Simple Device for Measuring Rate of Metabolism.—An apparatus for measuring the rate of oxygen consumption, designed to be portable in a practical sense, is described and illustrated. Sources of error are discussed and their percentages reduced to a minimum consistent with simplicity. Mathematical procedures necessary for calculation of the rate of metabolism (from the respiratory quotient, the body area, and the rate of oxygen consumption) are eliminated from the test. The reading is made directly, in terms of calories per hour per square meter of body area. Independent and comparative tests show its technical variations to be within physiologic and individual variations, and, therefore, adequate to the needs of the clinician as an instrument for measuring basal metabolism.—Harry M. Jones, *Arch. Int. Med.*, 27, 48 (1921).

✦

Relation Between the Virulence of Streptococci and Hemolysin.—Strains of streptococci whose virulence has been increased for any one species of animal do not produce greater concentrations of hemolysin than the original strain. Furthermore, there is a tendency for the original culture to grow more rapidly than the more pathogenic form, and to reach the height of hemolysin production at an earlier stage during the growth of the culture. These conclusions can probably be applied only to experiments in which the serum used in the media is from some species not employed for the animal passages.—Franklin A. Stevens, John W. S. Brady and Randolph West, *Jour. Exp. Med.*, 33, 223 (1921).

✦

Hemotoxin Production by the Streptococcus in Relation to Its Metabolism.—The question of hemotoxin production remains a complicated one. A summary of the entire study indicates only that hemotoxin production is due to, and controlled by, conditions that influence growth. As such conditions can be studied only as a complex of interacting forces with no possibility of observing the action of a single variant, it is not possible to state the exact relationship between any one phase of metabolism and hemotoxin production. One can conclude only that hemotoxin production is an expression of the summation of activities

of the organism and is capable of varying with every variation of environment and nutrition.—Marjorie W. Cook, Virginia Mix and Ethel O. Culvyhouse, *Jour. Inf. Dis.*, 28, 93, (1921).

✦

Study of the Thrush Parasite.—Seventeen strains of the thrush parasite proved identical and constant in their morphologic and cultural characters. They all corresponded to the nonliquifying type of Fischer and Brebeck. Carbohydrate mediums were fermented uniformly and constantly by all strains. They are of value in the identification of the species. Agglutinins are not produced by the thrush parasite in sufficient quantity to be of diagnostic or differential value. The thrush parasite produces chlamydospores but not ascospores. It is correctly placed in the genus *Oidium*. The organism tends to assume a mycelial form in liquid mediums, in mediums containing complex carbohydrate, in mediums of low oxygen tension, and in mediums of low surface tension, while the unicellular or yeast-like form occurs in solid mediums, in the presence of simple carbohydrates, and an abundance of oxygen, or mediums of higher surface tension. These factors may be interrelated, while other factors as yet unknown may affect the morphology. It is suggested the pleomorphism of this organism is an attempt at adaptation, the mycelial form developing in relatively unfavorable conditions.—Bertha C. Fineman, *Jour. Inf. Dis.*, 28, 185, (1921).

✦

Precipitin Reaction in Diagnosis of Gonococcus Infections.—The authors claim that the present methods of diagnosing gonorrhea are inadequate since in many cases, clinically positive gonococci cannot be demonstrated in the discharge whereas a positive precipitin test is obtained in all cases where the gonococcus can be found in the discharge. A positive precipitin test is found in specimens from many patients whose history and clinical symptoms point to gonorrhea but in whose discharges the gonococcus cannot be demonstrated. The precipitin test is of value in the diagnosis of vaginal and other specimens where the microscopic demonstration of gonococci in the discharge is difficult or impossible.—G. H. Robinson and P. D. Meader, *Jour. Urol.*, 4, 551, (1920).

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MUNICIPAL ADMINISTRATION OF HEALTH AND WELFARE DEPARTMENTS

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Long Beach, Cal.

Read before Public Health Administration Section, American Public Health Association, at San Francisco, Cal., Sept. 13, 1920.

This author suggests separate departments of public service, safety and welfare. Fire, police and health would be divisions of public safety. Public welfare should include social welfare, public schools, public library and recreation. Social welfare should dispense all relief funds, and teach mental orderliness in homes with highest grade of trained nurses for teachers.

MANY of us here present can remember when the services of the municipal health officer were very largely confined to quarantining contagious diseases, and to the suppression of obnoxious odors. However, with the concentration of vast numbers of people in our cities, and with our rapidly expanding knowledge of the causes of disease, problems of health and sanitation by the score have been forced upon him until his importance in community development has become second to that of no other municipal officer. Perforce he has expanded from being merely a medical man to become also skilled in law, bacteriology, chemistry, engineering and sanitation. His duties now lead him through all the streets and alleys of the city. They take him to municipal build-

ings and churches, to theatres, stores, jails and schools. He keeps a watchful eye upon factories, laundries, barber shops and bath houses. He investigates the keeping and selling of foods, and the use of injurious adulterants, dye stuffs and preservatives. He examines milk and water. He goes far to investigate dairies, and he wades swamps to destroy the anopheles. He looks into ash cans and vaults, and into sewers for rats and other vermin. He quarantines, and combats epidemics and endemics. He keeps morbidity and mortality statistics. His ministrations extend to the city hospitals, bureaus, stations, laboratories, and to cemeteries and crematories. He regulates the actions of physicians and undertakers. Wherever public sanitation and health are endangered there is found the health officer to advise and admonish

and, when necessary, to enforce his mandates.

This field which so largely envelops and guards the lives and industries of men, ever widening and ever growing in the confidence of the people, has well proved its worth. Step by step it has developed upon public sentiment in each city to meet the needs of that city, as surely as any other department has grown to meet the needs at hand. And so it must be that the efficient administration of municipal health functions shall depend upon keeping the health officer close to those whom he serves. That he may receive this necessary sympathetic support each municipality must build, direct and own its own department, and appoint its own health officer.

SCOPE AND DUTIES OF THE SOCIAL WELFARE DEPARTMENT

The social welfare department of a city should be built upon an entirely different plan from that of the health department, and upon a no less sure foundation. While the health department has to do with unwholesome conditions and disease, endangering the public at large, the social welfare department has to do with social ignorance and error in their incipency; with the intricacies and the secrecies of poverty, disease and crime. It deals especially with the relief, conduct and sociologic education of women and children in the privacy of their homes. For these and for many other reasons the work of the social welfare department is better conducted by women. That this may be done successfully the agent in command should have all the moral and material backing of every factor in the entire city in the prosecution of her work. She should be given complete authority for her every act, and be held responsible for results as surely as is the health officer or the fire chief. She should have charge within the municipality of the disbursing of all relief funds whether they come from public or private sources. She should

direct and completely control all public nursing, prenatal care, care and feeding of infants, humane treatment of children, sanitation in the home, recreation, character training, truancy, juvenile delinquency, instruction in hygiene, social diseases, prevention of tuberculosis, the parents' educational center, the labor bureau, school health inspections and legal advice bureau. She should administer matters of social welfare for schools, for the county, the city, the state, and for national organizations by agreement with these bodies. She should administer trust funds for individuals and corporations that may be placed in her hands for the purpose of social relief and service.

By virtue of her many functions in homes needing welfare service, she will be enabled to prevent in a large measure the common catarrhal condition of the respiratory tract of children; to protect the tonsils and ears from contagion, and the lungs from the invasion of the tubercle bacillus. She will see that the teeth, nose and throat are kept in a sanitary condition, that the hands do not carry diseases from the bladder and bowel discharges, nor from the eyes and sexual organs. Flies, fleas and lice will be combated. Bed clothes, towels and eating utensils will be kept clean, and disinfection by sunlight regularly carried out. Malnutrition and intestinal infections will be prevented by the service of the agent.

All these things, and many more, must be taught by the agent in the home in which she labors, and this teaching, to be of permanent service, should result in the establishment of orderly habits on the part of the inmates. The disorderly mind cannot employ sanitary, dietetic or hygienic methods, nor will it follow other stable social practices. Mentality, fortunately, can be systematically improved in every grade of home that is reached by the social welfare agent, and it must be improved to secure reasonable returns for services rendered.

That there shall be no conflict between the health and welfare departments the former should be placed in the division of public safety and the latter in the division of public welfare. An ideal division of the municipal administrative functions should be somewhat as follows:

1. *Public Service:*

Streets, sidewalks, building permits, plumbing, sewers, waste disposal, bridges, docks and wharfs, parks, playgrounds, water, electricity.

2. *Public Safety:*

Fire, police, building inspection, harbor regulations, health.

3. *Public Welfare:*

Social welfare, public schools, public library, recreation.

Each of the three divisions should have an advisory committee appointed by the city manager, subject to approval by the council. The manager should act as chairman of each committee and should appoint subcommittees to function in departments of their respective sections. Each committee should receive not less often than once a month a full report from the superintendent of each department to which it is attached.

Fig. 1 illustrates the proposed relations of the legislative and administrative bodies and the division of functions in the administrative body.

LONG BEACH SOCIAL WELFARE BUREAU

The direct system of administering social welfare relief and service, as distinguished from the indirect or associated plan, was instituted in Waterloo,

~ SCHEME OF MUNICIPAL GOVERNMENT ~

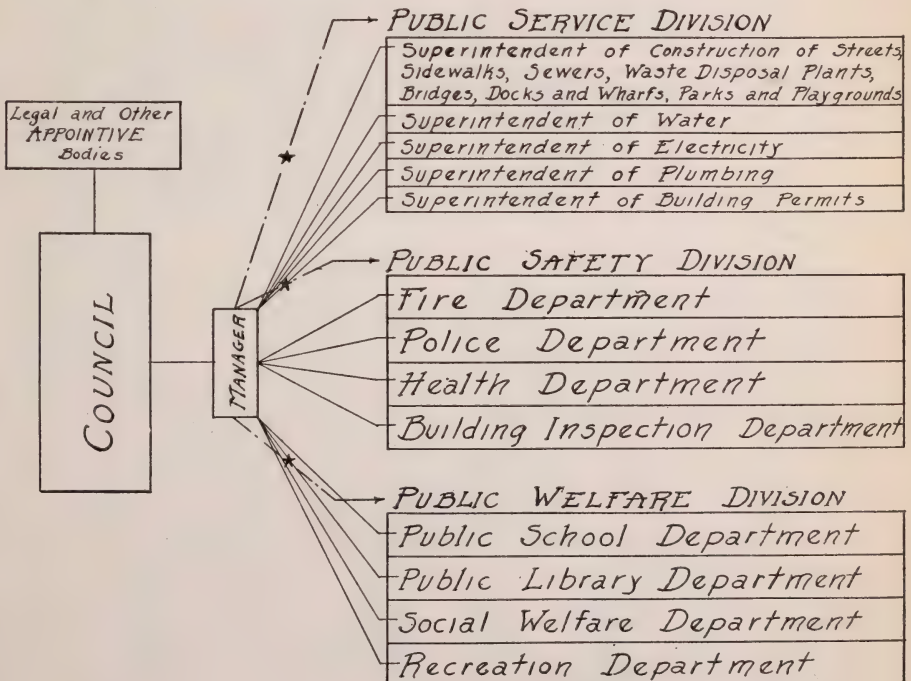


FIG. 1

★ Citizen Advisory Committee

Iowa, in 1907. It is better illustrated, however, in the work of the Long Beach, California, Social Welfare Bureau where it has been in operation for the last three years and is sufficiently established to permit of a description of its construction, its methods of functioning and of the results it has obtained. The system, it will be observed, eliminates all thought of coöperation of two or more agencies in the field, and requires that every public organization ministering to the social pathology of the city shall lose its identity in the centralized responsibility of a single agent.

Fig. 2 illustrates the plan of organization of the bureau.

It will be noted in the diagram that there are unequal sums of money placed in the hands of the agent by the four great organizations, namely, the county, city, public schools and social welfare league, for expenditure in the field. However, as each gives in proportion to its normal requirements, and as they

profit equally by the tremendous returns from combined constructive service, no trouble has developed in adjusting the outlay required from them. A monthly report of all expenditures by the agent is submitted to the league, the county, the city and the school authorities. Especial satisfaction has been experienced in the use of private moneys administered by the Board of Directors of the Social Welfare League, and expended by the common agent. This is for the reason that the fund goes directly into homes for relief and service without paying for maintenance charges, and because it is not wasted upon impostors and upon county and city subjects.

Welfare work taken over by the nurses of the bureau is standardized by furnishing each with charts permitting of scoring upon a percentage basis the sanitary and hygienic conditions of homes, the remediable physical conditions of their inmates and the social or character qualities of the children.

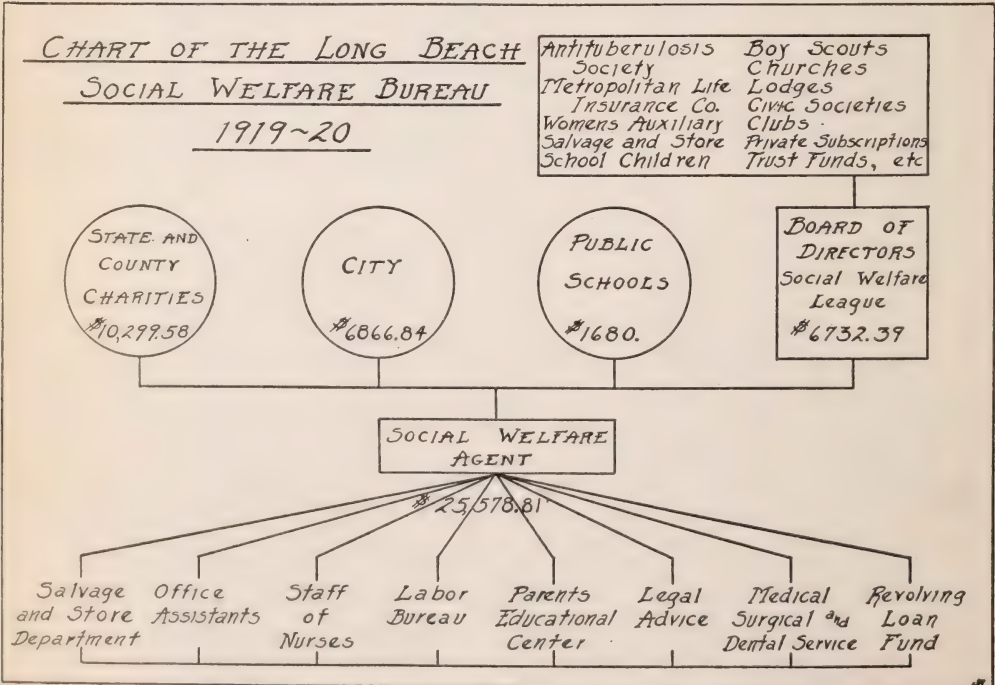


FIG. 2

When scoring the home, perfect conditions in each of the following sections is given 10; excellent, 9 to 10; good, 8 to 9; fair, 7 to 8; poor, 6 to 7; bad, 4 to 6; very bad, 0 to 4.

1. Air: ventilation, crowding, sleeping alone.
2. Sunlight in living and sleeping rooms.
3. Cleanliness of the house.
4. Cleanliness of the children.
5. Cleanliness of clothing, including diapers and bed clothing.
6. Screens, flies, vermin.
7. Garbage storage.
8. Quality of water, of milk and other food. Cooking and conservation of food.
9. Playmates and social environment.
10. Home training of children.

When scoring remediable physical conditions of children each of the following sections is given 10 if perfect, and 0 when not perfect:—

1. Eczema or other skin diseases.
2. Pediculosis or other parasites, including those of the intestine.
3. Neglected or delayed teeth: decayed, unclean, poor alignment, etc.
4. Neglected tonsils; discharging ears.
5. Neglected adenoids and nasal conditions.
7. Neglected eyes: infectious, vision, etc.
8. Deformities of the spine, feet and limbs.
9. Malnutrition: too fat, too thin, anæmic.
10. Other persistent, or recurrent remediable conditions.

When scoring the social or character qualities of children perfect performance in each of the following sections is given 10; excellent, 9 to 10; good, 8 to 9; fair, 7 to 8; poor, 6 to 7; bad, 4 to 6; very bad, 0 to 4. Where conditions permit of no score whatever X is given. Lack of space prohibits the giving of the various items in each section:—

1. To what extent does he care for his own person and needs?
2. To what extent does he abstain from injurious foods, habit-forming drugs and injurious practices?
3. To what extent does he share in the household duties?
4. How does he obtain money or its equivalent?
5. What is his sense of responsibility for family and public property?
6. How does he accept responsibility for his acts?
7. What is his valuation of dress and ornamentation?
8. What is his moral initiative?
9. His valuation and use of time?
10. His nervous stability, moroseness, flashes of anger, destructiveness, foolish remarks and laughter; his facial and ocular expression.

The scoring of both the physical and character qualities of children is carried out at the parents' educational center where the nurses are trained in the methods they employ in the field. It is at this place, also, that nurses are assigned to families in need of particular care and training, and it is to the center that they take children for special examinations and advice.

CHARACTER TRAINING FUNDAMENTAL

For the reason that sanitary and hygienic conditions of the home are directly related to the social or character qualities of its inmates, the services of the bureau are centered upon training parents and children in the employment of orderly methods in the care of their own persons and needs, in the care of the home and in their relations with the community. This work meets with the best response and success in the training of children under four years of age, at which time the ties between parent and child are particularly tender and intimate. However, 17% of the older children sent to the Long Beach center for character scoring returned repeatedly for training. At the first examination the

average score of all of the children over four years of age was 71.6%, and of those returned for training, 59%. The average score of the latter group has been raised to 75%.

The least satisfactory results have been obtained in the training of children whose parents were of pronounced low mentality. This is illustrated in the following diagrams. Here, Fig. 3, the father's intelligence, inner circle, is that of a person seven years of age, and his character qualities are, outer circle, only 40%. The mother's intelligence, Fig. 4, is that of a person but ten years of age and her character qualities are only 65%. Their eleven and one-half year old son, Fig. 5, has an intelligence quotient of 100%, inner circle, and had at the time of his first examination, a character score of 69%. The latter score was raised by persistent effort to 86%, outermost circle, but could not be maintained to this point.

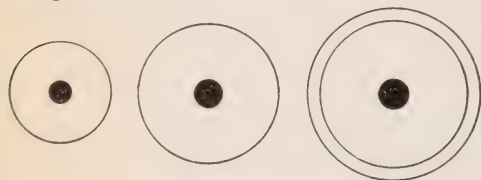


Fig. 3 Fig. 4 Fig. 5

RELATIONSHIP BETWEEN SERVICE AND RELIEF MEASURES

The county charities agency, together with the state-aid department, provides the Bureau with relief funds only, and it does not directly contribute service for the prevention of the poverty to which it ministers. Through their connection with the Bureau the public schools deal only with service for the prevention and control of disease and crime. However, the city charity funds, and the funds of the Social Welfare League, are used for both relief and service in the prevention and treatment of social pathology. As the persons in the care of all four agencies are municipal subjects, and are gen-

erally identical, they are given relief and service by the bureau in a unified and systematic manner. Service is given wherever it is needed without restraint, and the cost of relief is charged to the proper agency.

After deducting the items for office rent, clerk hire, transportation, supplies and other costs of operation, which amounted to 12% of the total expenditure, the Bureau had for the last fiscal year a balance of \$22,501.20 which remained to be disbursed for relief and service.

Of this the amount used for relief, including food, rent, state aid, etc., was \$13,441.85, and for service, including the salaries of the agent, nurses and the adviser in the Labor Bureau, was \$8,999.35.

The relative and proportionate expenditures for relief and service by the four agencies in the Bureau, namely the county charities and state aid, the schools, the city welfare department, and the League, are given in the order named in Fig. 6. The dark section in each diagram represents the relief given and the light section the service rendered.

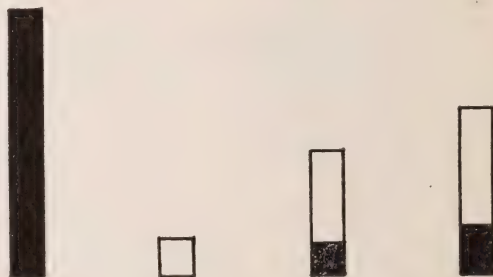


Fig. 6

The application of direct service in homes has made it possible for the Bureau to operate without the aid of milk stations, or of medical, surgical and dental clinics.

CONCLUSIONS

The associated or indirect plan of deal-

ing with the sociologic problems of a city should be abandoned.

A municipal social welfare department should be established, properly financed, and given a responsible head. It should be enabled to administer all social relief and service funds appropriated for these purposes by the Federal Government, the State, the county, the schools and private philanthropic organizations. The bureau should have an advisory board appointed by the legislative body of the city.

The foundation work of the department should be the teaching of mental orderliness or social character qualities

in the home as the most effective method for the improvement and protection of children, and the prevention of poverty, disease and crime.

The field workers should be selected from the highest grade of trained nurses, who will be able to discover insanitary mental and physical states that interfere with the proper development of the child in the home.

There should be a parents' educational center in every community, conducted by the social welfare agent, where a standardized system of scoring homes and children is taught.

SANITATION IN BAKERIES

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Read before Food and Drugs Section, American Public Health Association, at San Francisco, Cal., September 13, 1920.

The modern bakery has deserted the cellar and the back street and does its work in modern buildings and even in the broad light with the consumer for a spectator. Industry is frequently in opposition to legislation, but here the bakers have demanded laws for bettered conditions of construction, maintenance and health of employees.

THE recognition of the need of throwing protection around the production and distribution of food came years after adequate laws against fraud and sophistication were on the statute books. Indeed it was not until 1912 that the subject of sanitary food production was given more than casual notice by food officials. At the annual convention of the American Association of Food and Drug Officials, held in Seattle in 1912, President Crumbine said, "My own personal judgment is that sanitary food control is the most important matter ever brought before the Association." Following his recommendation, the Association approved a model sanitary law. This law

is now on the statute books of practically every state, and where jurisdiction is placed in the Health Departments it is at least partially enforced. Such legislation safeguards the consumer. It is even more helpful in protecting the producer.

The methods of handling raw materials and finished food stuffs have been revolutionized in a decade. Conditions which were common then are intolerable now. No industry has made greater progress toward cleanliness and sanitation than that of the bread baker. Baking as an industry dates back thousands of years. It is a necessity in modern life. For ages the baking industry worked in the dark, in base-

ments, on back streets beyond the sight and ken of the consumer. Bakers as a class were short lived for the conditions under which they worked were not conducive to healthfulness. The modern bakery bears no resemblance to the shop which operated successfully even a few years ago. It has deserted the cellar; it has left the back street and now operates in modern factory buildings, often palatial in their wealth of plate glass and tiling. It has taken over the most prominent corners of the busy city streets, and it does its work in the broad light of day where the consumer can see every process of baking the loaf.

These amazing improvements have come about partly by legislation and partly because the baker now realizes that his industry should take the place of home baking and that that end can never be reached until the housewife is convinced that the bakery is quite as sanitary as her own kitchen, and that the baker's loaf equals that drawn from her own oven.

No small part of the baker's progress has come with the organization of the industry. The baker, in common with other business men, no longer looks upon his competitor as a curse. He realizes that his business will grow only when it commands the confidence of the consumer. Out of this changed viewpoint has come the demand on the part of the baker for legislation and regulation of his industry by health officials. While the tendency in most industries is to avoid and defeat legislation, the bakers, individually and through their state and national associations, are now asking for legislation. The first law of this character was passed in Indiana in 1919 and a study of the law determines definitely the sanitary condition of the modern bakery. The second law of this character has recently been passed in Massachusetts and has just taken effect. The Indiana and Massachusetts statutes are practically identical in character. They

differ only when different methods of law enforcement make certain adaptations necessary. They specifically provide that buildings or rooms used for the production or sale of bread or other bakery products, shall be clean, properly lighted, drained and ventilated. The bakery must be provided with adequate plumbing and drainage facilities, including wash sinks, toilets and water closets, and such toilets and closets must be in rooms having no direct connection with the factory, store or salesrooms. The floors, walls and ceilings must be kept in a clean and sanitary condition and all openings into work rooms, including doors and windows, are required to be screened. Under these new laws, the work rooms can be used for no other purposes than those for which they were intended and the old practice of using the bakery as a living and sleeping room no longer obtains. Special rooms are provided for the changing and hanging of wearing apparel and these rooms must be kept clean and properly ventilated.

One of the most important provisions of these laws requires any person intending to work in a bakery to submit to a thorough examination for the purpose of ascertaining whether or not he is affected with any contagious, infectious or other disease or physical ailment. The condition of health of the employee must be shown by a certificate of medical examination and the rules for conducting the examination are set out by the health authorities. It is made illegal for physicians to give a certificate of freedom from disease unless a thorough examination has been made. The Indiana law further provides that any employee who engages in bakery work without first procuring a certificate of health is violating the law.

Is more evidence necessary to show the desire of the baker to maintain a sanitary plant than is manifested in these rigid requirements? Has any other industry asked for legislation which spe-

cifically requires the applicant for a position to determine that he is free from disease? The employee in a bakery, in at least two states, is in a class apart from his fellow workers. The very fact that he is engaged in the production of bread establishes his position as a healthy man.

The character of the material the baker uses requires that his processes be intelligently handled, and the loaf of bread fresh drawn from the baker's oven is, from a sanitary standpoint, a very satisfactory food. The examination of freshly baked loaves shows a low bacterial content, but under the old method of transportation and delivery the loaf was subject to contamination by the dust of the street, by unclean hands, by flies. Modern bakery methods avoid contamination by wrapping the bread in protective coverings of waxed or parchmented papers. In addition to this provision, in itself adequate, modern legislation requires the wagons, boxes, and baskets in which bakery products are carried, and show cases and shelves from which they are sold, to be well covered, properly ventilated, and protected from dust and flies and always to be kept in a sweet and wholesome condition.

The baker is still using the bread box outside the retail store for receiving early morning deliveries. The bread box is not and cannot be always sanitary, but the desire on the part of the consumer for freshly baked bread still compels its use in many cities. Legislation has, however, established certain conditions under which these boxes may be used. It requires that they are to be constructed and placed so as to be free from the contamination of streets, alleys and sidewalks, and that they be raised at least ten inches above the sidewalk or street level and that no material other than bread shall be placed in the box.

In years past unsold bread could be returned to the baker either to be used by him as animal food or re-sold at a reduced price. Obviously bread so

handled is doubly exposed to contamination. It is always stale and sometimes contaminated by mold or a certain bacterial growth technically known as rope. Modern legislation follows the idea first set forth by the United States Food Administration. During its control the custom of returning stale loaves to the bakery was prohibited. In other words, bread once sold remains sold like any other food stuff. This provision has taught the grocer or retailer of bread to buy only such quantities as he can sell, thus saving waste and insuring proper care.

In earlier years, men have assumed their right under the constitution to engage in any business they saw fit to follow. Men who wished to bake bread became bakers. It made no difference whether they knew how to operate a bakery or not. No questions were asked as to where they proposed to bake nor was any regulation thrown around the methods used in the new shop. Today, no new bakery can be established in Massachusetts unless the building plans and the equipment which is proposed to be used have been approved by the local Board of Health. Furthermore, if, after having been opened, the bakery is not properly operated the local health authorities may order it closed. Such legislation as this is constructive in character. It pays to operate any essential industry in accord with the ideas of the health officials. No bread consumer need fear the quality of the loaf which comes to his table if the health authorities are alert. The legislation is adequate, and the desire on the part of the baker to maintain sanitary conditions is fully established by the fact that he himself asked for legislation. The baking industry, at least in the states above referred to, works hand in hand with the health officials, always desirous of employing better operating methods in buildings and with machinery which marks the last word in sanitary progress.

THE WASSERMANN TEST IN THE PUBLIC HEALTH LABORATORY

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Read before Laboratory Section, American Public Health Association, at San Francisco, Cal.,
Sept. 13, 1920.

The responsibility for correct Wassermann tests on the part of the public health laboratory can not be over-emphasized. Dr. Kahn discusses the underlying factors governing correct tests, naming five requirements to this end.

THE Wassermann test in a public health laboratory should be of the highest accuracy. The physicians who send specimens for examinations are not often able to talk over the results of a given test with the serologist. In a hospital Wassermann laboratory if the findings do not check the clinical diagnosis there is little difficulty in obtaining another specimen and repeating the test. In a public health laboratory, however, where specimens come from physicians who are scattered over a wide area, the Wassermann results must necessarily be accepted as practically final. It is evident that the responsibility of the public health laboratory in giving absolutely correct Wassermann results, is greater than that of the hospital laboratory. Indeed, this phase, in our opinion, cannot be over-emphasized. Only a few days ago we received, among others, a blood-specimen from a bride who requested that her blood be examined out of regard to her fiancé who had had his examined. The extreme harm resulting from a false report in such, and similar cases, is only too evident.

Unfortunately, there is an element in the public health laboratory which tends to render the Wassermann results less, rather than more accurate. We have in mind the element of time. The labora-

tory which runs 100 or more Wassermanns a day, six days a week, is obliged to follow a procedure which will enable the staff to complete the tests at a reasonable hour. The average Wassermann laboratory has eight working hours and during this period every phase of the Wassermann test must be completed.

We ourselves, for example, have been under the impression for a long time that state and municipal laboratories could not titrate complement daily because of the delay it involved. We believed that such laboratories should titrate amboceptor instead. This titration, as is well known, can be carried out during the fixation period without in any way retarding the completion of the daily tests. We also believed that the removal of natural amboceptor from the patients' sera as a daily routine procedure was practically impossible because of the delay it entailed.

However, we have long since changed our views regarding these matters, and in the Wassermann laboratory of the Michigan Department of Health we not only remove the natural amboceptor from each and every serum to be examined, but we also titrate both complement and amboceptor daily. Furthermore, we run our Wassermann tests in duplication, employing a cholesterinized antigen with

water-bath fixation and an alcoholic-extract antigen with ice-box fixation, and we titrate each antigen daily both for its antigenic unit as well as its anticomplementary and hæmolytic properties. The results of these titrations (combined with proper controls) can be seen from the fact that out of 8,000 specimens determined during the past four months only five did not check by both methods; or one specimen in 1,600*. In other words, we believe that a public health laboratory can, and should include every possible detail which tends to render the Wassermann test accurate and reliable.

This leads us to the several phases of the Wassermann test which we particularly wish to discuss in this paper. Briefly, we started out with the aim of running Wassermann tests of the highest accuracy, and at the same time, rendering the procedure sufficiently practical so that a reasonable number of Wassermann workers might complete the day's run within an eight-hour period. A complete report of our work will appear elsewhere. In this paper, only the following phases of the Wassermann test will be discussed: (1) The time element in the titration of the hæmolytic system, (2) The daily titration of complement and amboceptor, (3) The removal of natural amboceptor, (4) The daily control system, (5) The importance of running Wassermann tests in duplication.

(1) The Time-Element in the Titration of the Hæmolytic System.—There is perhaps no element in the Wassermann test which is carried out more empirically than the incubation time of the hæmolytic system. Whether one titrates complement or amboceptor, the time of incubation is usually arbitrary. Most workers have adopted one hour as the titration period undoubtedly because Wassermann himself chose to employ

this length of time. However, while Wassermann's original technique has undergone numerous modifications, the hour-titration period has remained practically unchanged, as is seen from the descriptions of the method in most text-books.

In our opinion, the incubation period of the hæmolytic system should be no more arbitrary than any other phase of the Wassermann test. This period can be easily determined by considering the Wassermann test as a series of titrations. To present this in outline form, we have in this test the following problem: To find the amount of complement necessary to bring about hæmolysis in a given time of a standard amount of corpuscles

- (1) in the presence of amboceptor,
- (2) in the presence of amboceptor + unknown serum
- (3) in the presence of amboceptor + antigen
- (4) in the presence of amboceptor + unknown serum + antigen.

It is evident from this outline that for correct Wassermann tests the time of incubation ought to be the same throughout. Yet it is not uncommon to find Wassermann laboratories where titration No. 1 is incubated one hour in the water-bath, while titration Nos. 2, 3, & 4 are incubated in the neighborhood of 15 minutes, or what is equal to the same thing, the final Wassermann tests are read just as soon as the controls are hæmolized, this in many cases, requiring no more than 15 minutes.

This factor of time in the incubation of the hæmolytic system is of such importance in a public health laboratory that we were led to investigate it more fully. Our problem was to find the amount of hæmolysis produced in complement titrations during 15 minutes as compared with one hour incubation. We employed 0.1 cc. of a 5% suspension of sheep-cells, 2 units of amboceptor, and guinea-pig complement (1-10) in gradations of 0.1 cc. to 0.01 cc. We found that if, let us say, 0.05 cc. of complement was the unit

*We consider a strong positive by one method and a weak positive by the other, a check; while a strong or weak positive by one method and negative by the other, is repeated as a matter of routine.

after 15 minutes incubation, 0.04 cc. was the unit after an hour's incubation; and if 0.04 cc. was the unit at the end of 15 minutes, 0.03 cc. was the unit at the end of an hour. In 60 such tests we found practically without exception that the difference between 15 minutes and one hour incubation was nothing more than one point in the complement gradation. This led us to standardize the incubation time of the hæmolytic system to a 15 minute period. We read our complement and amboceptor units respectively after 15 minutes incubation, and we read our final Wassermann tests just as soon as the controls hæmolyze, which takes in practically every case about 15 minutes. This 15 minutes standardization of the hæmolytic phase of the Wassermann test is, in our opinion, not only scientifically correct, but highly desirable for a public health laboratory.

(2) The Daily Titrations of Complement and Amboceptor.—Having adopted a 15 minute incubation period for the hæmolytic system, the long-disputed question as to whether to titrate complement or amboceptor in the Wassermann test, is practically eliminated, since either one of these titrations can be completed in 20 minutes. Indeed, it takes only from 3 to 4 minutes to set up either a complement or amboceptor titration and with 15 minutes incubation, one can determine the unit of complement or amboceptor in less than 20 minutes.

In this laboratory, we titrate both complement and amboceptor and we find it entirely worth while. Furthermore, we consider the obtaining of a correct complement unit of such importance, that two workers carry out complement titrations independently of one another, and if these titrations do not check, they are repeated. Two units of complement are employed in the tests. And during the fixation period, we titrate our amboceptor, using the two units of previously determined complement, as the constant. Although the potency of amboceptor is relatively uniform, we nevertheless find

that not infrequently we have to change our amboceptor dilution to bring it up to two units, thus proving the importance of these titrations.

It might be added that the titration of the hæmolytic system in the presence of antigen cannot very well be carried out in a public health laboratory, since, in order to carry out such titrations properly, one has to include primary incubation or fixation periods at the same length of time and at the same temperature as carried out in the tests. Thus, according to our procedure, the complement titration with cholesterinized antigen would have to be given a half-hour fixation period in the water bath, and the complement titration with the alcoholic antigen, 4 hours in the ice-box.

Neither is there any advantage in adding pooled negative sera to complement titrations, since the sera employed would necessarily have to be those left over from the tests—in other words, comparatively old—and, as is well known, the older the serum, the more complement it absorbs. It is questionable, therefore, whether the complement absorption of such pooled sera would represent the amount of complement absorbed by comparatively fresher sera, employed in the tests. In our opinion, the daily titration of both complement and amboceptor and the employment of two units of each, is, in so far as our present knowledge goes, the ideal procedure for a public health laboratory.

(3) The Removal of Natural Amboceptor from Human Sera.—Although it is well established that the presence of natural amboceptor in human serum interferes with the accuracy of the Wassermann test, (guinea-pig complement, sheep-cell system), yet to our knowledge, there are but few state and municipal laboratories which remove this amboceptor as a routine daily procedure. The reason, as was pointed out above, undoubtedly lies in the fact that any of the established methods for removing natural

amboceptor is altogether too time-consuming to be applied routinely where 100 or more Wassermann tests are run daily.

We approached this problem by studying the rate of absorption of amboceptor by 0.05 cc. of packed sheep-cells (approximately 1 drop) at room temperature. Mr. D. S. Lyon, who investigated this phase of the work in this laboratory, added a drop of packed sheep-cells to a series of 6 tubes each containing 400 units of amboceptor and permitted the extraction to take place at room-temperature for the following periods:

- 1st tube for 5 minutes
- 2nd tube for 10 minutes
- 3rd tube for 15 minutes
- 4th tube for 20 minutes
- 5th tube for 25 minutes
- 6th tube for 30 minutes

The period of extraction was stopped in each case by rapid centrifugation and titrations were immediately carried out to determine the amount of amboceptor left of the original 400 units.

The results were very significant. It was found that an ordinary-sized drop of packed sheep-cells actually absorbed over 80% of the 400 units during five minutes extraction. These experiments were repeated with pooled human sera to which were added 0.01 cc. amboceptor-serum containing also 400 units, with similar results. This problem is still under investigation. This, however, we believe to have established, namely, that an ordinary-sized drop of packed sheep-cells will extract in five minutes at room-temperature as many as 350 units of amboceptor.

This finding suggested the following routine procedure for the removal of natural amboceptor from human sera:

(1) A concentrated sheep-cell suspension, previously packed down by centrifugation, is added to inactivated sera in the proportion of 1 drop to 1 cc. of serum, mixed and permitted to extract for 10 minutes at room temperature.

(2) The sheep-cells are then thrown

down by centrifuging at high speed, and the clear supernatant serum is ready for use.

This simple procedure, applied to about 100 tests, can be completed in from 30 to 40 minutes, and in our opinion, considerably simplifies the problem of removing natural amboceptor from human sera.

It might be added that we have tested the efficacy of this procedure in the following manner: After fixation of complement by serum and antigen, sheep-cells were added (without amboceptor) and incubated in the water-bath at 37° C. for 10 minutes. Natural amboceptor, if present, would thus have had ample time to produce hæmolysis of the cells. However, we have not observed a single instance of hæmolysis in over 300 such tests carried out at different times. Neither have we found any indication of anticomplementary properties developing in the sera after this short extraction period.

(4) The Daily Control System.—

We employ a simple daily antigen titration which helps us greatly in checking the correctness of our Wassermann results. To begin with, we standardize our cholesterinized antigen to contain from 2 to 3 antigenic units only. This is done because of the generally established fact that the cholesterinized antigen has a tendency to pick up false positives. Our alcoholic-extract antigen, on the other hand, is standardized to contain from 8 to 10 antigenic units. These standardizations in the case of new antigens, are carried out daily for a week with different pooled positive sera and are finally employed in the test only after the antigenic unit is sufficiently removed from the anticomplementary and hæmolytic units. After this is accomplished and the dose of antigen to be used in the tests decided upon, we employ the following five-tube antigen titration:

Tube No. 1. Contains regular dose of

antigen + standard amounts of complement and pooled positive serum.

Tube No. 2. Contains half the dose of antigen + same amount of complement and serum.

Tube No. 3. Contains one-quarter of the regular antigenic dose + same amounts of complement and serum.

Tube No. 4. Contains four times the antigenic dose with standard amount of complement (anticomplementary control).

Tube No. 5. Contains four times the antigenic dose without complement (hæmolytic control).

These five tubes are incubated one half hour in the water-bath, in the case of the cholesterinized antigen and four hours in the ice-box, in the case of the alcoholic antigen, after which sheep-cells and amboceptor are added to each of these tubes as to all the regular tests, and hæmolysis observed, after water-bath incubation.

Now, in the case of the cholesterinized antigen, tube No. 3 containing a quarter of the regular antigenic dose, is expected to show partial hæmolysis, since we employ no more than 3 antigenic units. In the case of the alcoholic antigen, on the other hand, tube No. 3 must show as complete complement binding as tube No. 1 with a whole antigenic dose. Tube No. 4 is to test the anticomplementary properties of the antigen. This tube contains four times the antigenic dose and it should not by itself absorb sufficient complement to delay hæmolysis. Tube No. 5 is to test the hæmolytic properties of the antigen. Four times the antigenic dose must not produce the faintest trace of hæmolysis. Thus, in the routine Wassermann tests, we get a daily picture of the relation of both one-fourth the antigenic dose and four times the antigenic dose.

Superimposed on this antigen titration we also add to our daily tests a pooled 4+ control, a pooled negative control and a doubtful control. This latter doubtful

control is of particular help to us; we consider a doubtful Wassermann test about half way between a one plus and a negative, and we expect this doubtful control to show about the same amount of complement binding from day to day. The appearance of these doubtful controls often gives us a clue as to how some of the "borderline" tests are to be read. Thus, if on a given day the doubtful control appears more like a one plus than a doubtful, we consider our system slightly "slow" and when we are in doubt whether to read a given test two plus or three plus, we read it two plus. If, on the other hand, the doubtful control is very weak, we consider our system slightly "fast" and we read our "borderline" tests accordingly.

It might be added that this control system is carried out aside from the regular antigen controls which consist of two antigen tubes (without serum) for each 9 tests.

(5) The Duplication of the Wassermann Test.—No matter how large a number of special titrations and controls one may employ in the Wassermann test, we nevertheless believe that in a public health laboratory, the tests should be run in duplication. Thanks to the extensive studies of Kolmer and his co-workers on the manifold factors which enter into the Wassermann test, we now know more about the underlying conditions which govern correct Wassermanns than we ever did before. However, the Wassermann test, as is well known, is not a chemical test, but a biological test. Indeed to this day, we do not know whether we are dealing in this test with an immunity reaction or a bio-chemical reaction. We therefore believe that the public health laboratory should at least run Wassermann tests in duplication, with as many variations in the procedures as possible. We believe also that the antigens employed should be from two different sources. In this laboratory we employ a cholesterinized antigen of pigs' hearts

and an alcoholic extract antigen of beef-hearts. And whenever the tests do not check with both antigens to the extent that one is a two plus, three plus or four plus and the other negative, the test is repeated.

To summarize, we believe that the public health laboratory:—

(1) Should titrate complement and amboceptor daily.

(2) Should remove natural amboceptor from serum as a routine procedure.

(3) Should obtain a daily picture as to the behavior of the antigens.

(4) Should include a doubtful (\pm) in its control system.

(5) Should run the Wassermann tests in duplication with two antigens coming from different sources.

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FACTORS THAT INFLUENCE INFANT MORTALITY

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Read before the Vital Statistics Section in joint session with the Child Hygiene Section, American Public Health Association, at San Francisco, Cal., Sept. 15, 1920.

In Florida infant mortality increases with the birth rate. Midwives with superstition and ignorance constitute a source of danger, conditions of labor probably contribute somewhat, while insanitary conditions of the home and its surroundings are unfortunate factors. While the rates both for white and for colored population are below those of the Registration Area, they call for processes of betterment.

THE infant of today will be the citizen of the future. It behooves us then to give first place to the care and well-being of our nation's greatest asset.

The number of babies dying in Florida last year before reaching the age of one year was 1,659. This gives a rate of 89 per 1,000 reported births as compared with the Registration Area rate of 94, in 1917.

It would appear that conditions in Florida are favorable. The white infant mortality rate in Florida is 72, as compared with 91 for the Registration Area; and the colored rate 126, as compared with 149 in the Registration Area. While it is gratifying to note that the infant

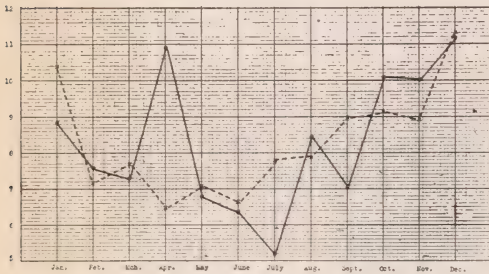
mortality rate in Florida is lower than the latest published rate for the United States Registration Area, we fully realize that entirely too many short coffins are required each year, for a large percentage of the baby deaths would be prevented if our present knowledge of the care of the baby could reach all parts of the state.

The purpose of this paper is to bring out some factors that play an important part in influencing infant mortality, particularly in Florida, where climatic and other conditions are quite different from states farther north.

Referring to Chart No. 1, we find the percentage of deaths for the year decreasing from January to July, with the

exception of the colored population during the month of April, and increasing steadily to the end of the year. Color plays an important part in Florida, owing to the fact that it comprises over 40% of the population. The percentage of deaths of colored infants shows an increase for April and a marked decrease for July.

CHART 1

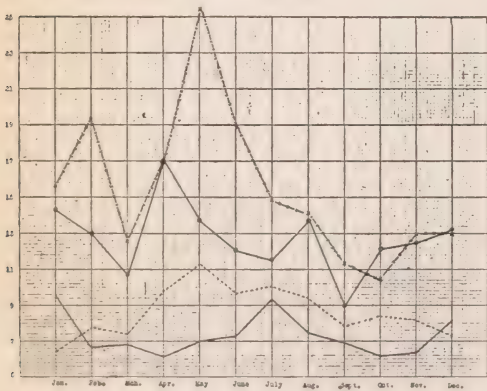


A comparison of the percent of white deaths with percent of colored deaths of children under one year for 1919 by months.

White x-----x
Colored o-----o

Chart No. 6 shows the highest infant mortality rate for the month of May. The birth rate for the colored is not high for April or May, but on the other hand is below normal.

CHART 6



A comparison of the monthly infant mortality rate for 1919 with 1917 by color.

White, 1919 ————o
White, 1917 -----x
Colored, 1919 o-----o
Colored, 1917 x-x-x-x-x-x

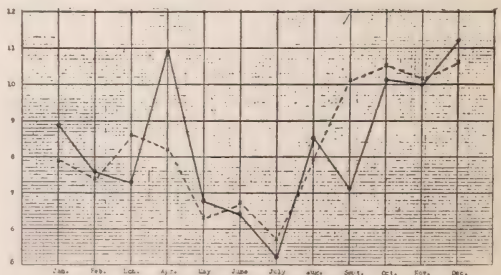
A study of the causes of death among infants for April reveals the fact that syphilis, tetanus, pneumonia and influenza are higher for the colored than for the white. Diseases of early infancy together with diarrhoea and enteritis, play an important part in infant mortality, but does not explain why April and May should go so high for the colored. We have not a large number of years for comparison and therefore cannot make a statement as to whether or not this is unusual.

In many parts of the state colored women are employed to dig the enormous potato crop which is harvested during the spring of the year. The diggers travel long distances in auto trucks and many camp nearby until the end of the season. All children who are able to work follow their mothers, and of course the little babies are very much neglected; not only improperly fed, but irregularly and often under-fed.

The low percentage of deaths among the colored babies for July, is largely due to the low birth rate, as shown on Chart No. 3. Very many of these babies are taken soon after birth, so that the number of births influences the number of deaths.

From mid-year to November, the percentage of births increases and in almost

CHART 3



A comparison of the percent of colored births with the percent of colored deaths of children under one year for 1919 by months.

Colored births x-----x
Colored deaths o-----o

like proportion the percentage of infant deaths increases. Towards the end of the year, however, we begin to notice an increase of deaths from malaria—this cause alone was responsible for 34 of the deaths last year of children under one year of age, which is 2% of all infant deaths.

“Dr. W. H. Deadrick found that children are more frequently and more severely afflicted with malaria than adults, and that it was probably due to their delicate skin and manner of dress, sounder and more prolonged sleep and inability to defend themselves against mosquito bites.”

Dr. Charles F. Craig states that “Observations made in Africa by Koch regarding malaria in native children proved conclusively that in malaria regions a very large proportion of infants and children show the malaria plasmodia in their blood, even though no symptoms of the disease be present, while in the majority of instances the blood of adults does not show any trace of malaria infection. From his findings he concluded that the adult natives in the tropics are immune to malaria because of having suffered from repeated attacks in infancy and childhood.

“In West Africa, Koch found that 100% of the children under two years of age showed malaria plasmodia, and that the percentage of infections decreases with advancing age.” We may safely assume then, that malaria influences the infant mortality in Florida, where many parts of the state are infected with mosquitoes and many of the houses are not screened.

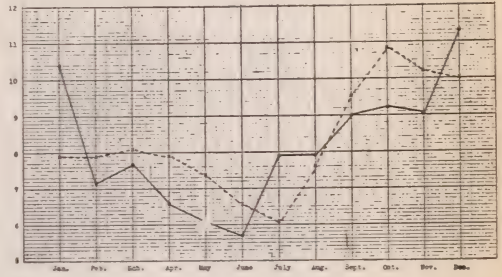
Thirty-nine percent of births last year were attended by midwives, and 78% of the colored mothers did not have a physician during confinement.

While we have more than one thousand midwives, there is no law governing their practice, and it is not surprising to find that 53% of the infant deaths last year were reported as occurring

from tetanus, convulsions, diseases of early infancy, causes unknown, etc.

Dr. Wm. McDonell, the City Health Officer for Jacksonville, requires midwives to pass an examination and receive a license before practicing in the city. It would be well to have a discussion on the midwife problem, and what steps should be taken in passing laws that will meet the situation. Education is of course vitally important but will take time. A law that would be ideal at some future date might be impracticable if put into effect at once.

CHART 2



A comparison of the percent of white births with the percent of white deaths of children under one year for 1919 by months.

White births x-----x
White deaths o—————o

A considerable proportion of midwives in addition to being ignorant as to sanitary and proper methods, are very superstitious, and often insist on ridiculous performances. A baby died recently and an investigation revealed the fact that a midwife had tied the cord with a piece of an old dirty skirt. Quite a number of the midwives cannot read or write, so it is not surprising to find them doing many things that even an intelligent mother would not think of doing.

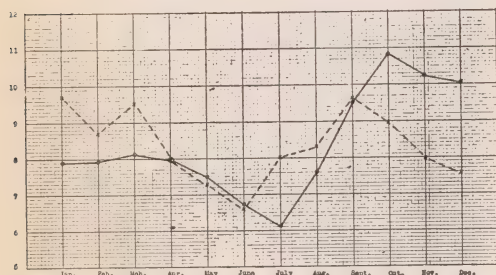
A set of midwife safety rules together with a prophylactic package has been put into the hands of every midwife in the state to be followed up with literature and other educational propaganda.

The United States Public Health Service pamphlet, “Care of the Baby,”

is mailed to every new mother just as soon as the birth certificate is received by the Bureau of Vital Statistics. These points are brought out not to advertise what we are doing but to solicit an exchange of practice so that we may have the benefit of what you are doing and thereby improve our own work.

Chart No. 2 shows the percentage of white deaths by months as compared to the percentage of white births by months, and bears out the same principle among the whites as referred to among the blacks, i. e., that a high percentage of births is followed by a high percentage of infant deaths.

CHART 4



A comparison of the percent of white births for 1919 with the percent of white births for 1917 by months.

White births, 1919 o———o

White births, 1917 x-----x

Assuming that 1917 was a normal year, Chart No. 4 and Chart No. 5 show a higher percentage of births at the first of the year for 1917, while 1919 shows a higher percentage of births towards the end of the year. This was caused partially at least, by conditions due to the war and the influenza epidemic. Many expectant mothers were taken during the fall of 1918 and a great many miscarriages caused by the effects of influenza. A large number of our young married men and men of marriageable age, were taken from their homes. It is to be expected then that the percentage of births during the early part of 1919 should show a decrease.

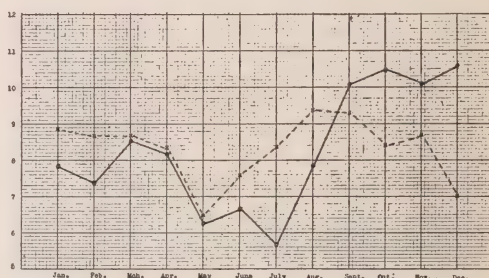
Chart No. 1 shows an increase in infant mortality after September, which

would indicate that the children of the family starting their school year carry home to the babies certain communicable diseases.

While in some states the cold weather would play an important part after September, in Florida we have very little cold weather before the first of the year.

Fifteen percent of all babies under one year of age, died from diarrhoea and enteritis, the only other cause equaling being "diseases of early infancy."

CHART 5



A comparison of the percent of colored births for 1919 with the percent of colored births for 1917 by months.

Colored births, 1919 o———o

Colored births, 1917 x-----x

Again referring to Chart No. 6, it will be seen that the infant mortality rate is higher during the summer months.

On account of a mild climate we might say that the fly season is the year around. There are, however, more flies during the summer. The open back privy plays an important part and has not been overlooked by the State Board of Health, through the Sanitary Engineering Bureau. If all houses in the state were properly screened and when not connected with sewer, had an approved type of sanitary privy in use, there would be an important reduction of infant deaths from diarrhoea and summer bowel complaints. A few dollars spent in the right way in this line will prove a money saver in the future, as well as lessening the sorrow and suffering of many innocent families.

Insanitary conditions of the home and

lack of proper ventilation play an important part. A great many of the houses built around logging camps do not have windows and when closed up at night have no ventilation. The fact that there is very little cold weather makes the heating of the house and the clothing of the baby less important, as it is possible to leave the doors and windows open all day, or have the baby out of doors twelve months of the year. The old custom of shutting the windows and closing the doors tight in order to keep out the night air is still a custom in some communities, particularly among the negroes, and affects the health of the babies, especially when several persons sleep in the same room. The only night air to be feared is last night's; open up and have fresh air.

A summing up of the factors that in-

fluence infant mortality in Florida may be stated as follows:

Midwives with their superstition, lack of education and training.

Diseases classified; as, of early infancy, tetanus and ignorance and lack of care.

Insanitary conditions of the home and its surroundings which affect the death rates from diarrhoea and summer bowel complaints.

Malaria in certain parts of the state is also an important factor.

The percentage of infant deaths increases with an increasing percentage of births.

The mild climate is a factor in reducing the infant mortality rate as it is possible to keep the baby out in the fresh air most of the time and offsets some of our handicaps.



Mental Hygiene.—That the importance of mental health is being recognized is made evident by the frequency with which this subject is now considered at meetings devoted to public health and hygiene. The importance of mental hygiene also becomes obvious when it is realized that Massachusetts supports 12 large state hospitals for the insane. There are approximately 15,000 patients in these hospitals. More than 3,000 new patients are admitted every year. It is estimated that one out of every 259 inhabitants in the state is at one of the state hospitals for the insane. The cost of maintaining these hospitals in 1919 was over \$6,000,000. This was equivalent to one-half of the state tax, and more than one-fourth of the state expenditures. The magnitude of the problem is hardly realized. In addition to those under treatment at the state hospitals for the insane, there are 2,500 patients at two schools for the feeble-minded maintained by the state. It is estimated that there are over 12,000 feeble-minded persons in Massachusetts. These obviously mentally defective people do not include the

large number of people who are suffering from "nervous prostration" or "neurasthenia" or minor psychoneuroses.

Most of these psychoneuroses can be materially benefited by proper treatment if recognized in the incipient stages. Parents and physicians should be particularly able to recognize early symptoms of mental ill-health and to recommend methods for cure. Sometimes the lack of adjustment of the individual may be overcome by a change of school, a new job, more recreation, new interests, a complete change in environment, proper sex knowledge, or a good talk with a trusted physician or an intelligent friend. It is important to bear in mind, however, that even though an individual cannot pass modern intelligence tests, or be 100% efficient mentally, he may not be necessarily a case for institutional care. Many people are decent and self-supporting even though they might technically be considered as mentally defective. Such people should also have "the right to liberty and the pursuit of happiness."—Dr. Walter E. Fernald, *Boston Med. and Surg. Jour.*, December 30, 1920. (*M. P. H.*)

SYMPOSIUM ON MENTAL HYGIENE

I. PUBLIC HEALTH EDUCATION AND MENTAL HYGIENE

FRANKWOOD E. WILLIAMS, M. D.,

*Associate Medical Director, The National Committee for Mental Hygiene,
New York City.*

Read before the Sociological Section, American Public Health Association, at San Francisco, Cal.,
Sept. 16, 1920.

THE public health program is a very full program, and if there are those who urge additions to it, it is right that they should be required to show that a real need exists. Is there, for example, a need for active propaganda in regard to mental health or mental hygiene? I shall not worry you with long lists of figures, but in this connection there are one or two things I should like to call briefly to your attention.

On January 1, 1920, there were 232,680 patients with mental disease in institutions in this country. Insane patients in almshouses, penal institutions, and reformatories are not included in the figures.

There were in addition 18,000 patients on parole or otherwise temporarily absent from hospitals. Including those on parole, the number of mental patients in hospitals approximates the number of students in all colleges and universities in the country. Some 60,000 new patients are admitted annually to these hospitals. By new patients I mean strictly patients admitted for the first time. Some 30,000 people die annually in hospitals for mental disease.

Since 1880, the general population of the country has increased 110.8% and during the same period the number of patients with mental disease in institutions has increased 468.3%.

The average annual per capita cost of caring for patients in mental hospitals is \$250, making a total cost of about \$60,000,000 a year. To this sum should be added, of course, the economic loss through the withdrawal into these institutions of about 75,000 persons each year.

The number of beds in this country for mental patients approximates the total number of beds in all general hospitals of the country. This is indeed a striking fact that the number of beds for the care of one group (the committable insane) of one type of patient (nervous and mental) approximates the total number of beds in all general hospitals.

With the situation as it is, is there a sufficient lack of general information in regard to these facts and to the causes which bring about such a condition to warrant more attention being given them in an already crowded program of public health education?

Professor Donald A. Laird of the University of Iowa last year sent out a questionnaire to some 200 intelligent people in his community. Professor Laird wanted to find out what might be the views of intelligent people today on certain questions in regard to nervous and mental diseases. These questionnaires were not sent out indiscriminately. They were sent to professors, to social workers, to physicians, to lawyers, and to teachers. If members of any group in a community should be well informed about these matters, surely they would be found in the groups selected by Professor Laird. And yet it was surprising to find that a very large proportion of these intelligent people still held the notion that to be insane was to be disgraced. A very considerable number of these intelligent people still were of the opinion that all, or practically all, the so-called insane were dangerous individuals, and they were quite sure they would be afraid of one, or afraid if one were known to be in the vicinity. The question was asked

as to the cause of mental disease. There were a great variety of answers, and it was surprising to find a considerable number who still felt that in some way or another insanity or mental disease was a punishment from above. Not a few were not aware that the state of Iowa made any provision for the care of mental patients. When asked to whom they would go if they believed they were themselves mentally ill, or a member of the family were mentally ill, the majority did reply that they would seek the advice of their physician; but there were others who would first advise with their attorney, or with a lawyer, and a considerable number who would first consult their minister or their priest. Now if what Professor Laird finds true in Iowa is true elsewhere—and one knows all too well that it is—then certainly there is much need for public education along these lines.

Let me go back for a minute to the matter of numbers and let me put these to you in a little different way. I caution you that you will probably feel that I am overstating the situation, but the figures I shall give you are as accurate as it is humanly possible to obtain. They are not the result of my own amateurish attempt at statistics, but are based upon the careful professional census made periodically by the Bureau of Statistics of The National Committee for Mental Hygiene.

When we say there are 60,000 new admissions to the state hospitals of the United States each year, the significance of the statement is not readily grasped. The number is difficult to visualize. Let us therefore take for a moment just the admissions to the hospitals on the Pacific Coast, that is, the hospitals of Washington, Oregon, and California. Last year there were admitted to these hospitals 3,962 new patients. Let us call it 4,000. What I want to point out is this, and it is a thing which we do not seem to realize. These people, these 4,000 people who are going to enter the hos-

pitals next year, and the 4,000 who are going to enter year by year—and let me say the number increases each year rather than decreases, so that we can make an estimate in advance, and still be underestimating rather than overestimating—are not an unknown group that will descend suddenly upon these coast states like a plague from some far off place and from some unexpected direction. They are our neighbors, our friends, and their children. They are not a group peculiar to Massachusetts, or New York, or Florida, but citizens and children of San Francisco, of Berkeley, of Oakland, of Los Angeles, of Seattle, and of Portland. The course of the 4,000 that are to enter the hospitals this year is about run, and they will soon be with us. But in the offing there is another 4,000, and, as far as we can see, yet another and another. It is a veritable army of living, breathing, unhappy individuals—4,000 within one year of hospital care; 8,000 within two years; 12,000 within three years; 20,000 within five years; 40,000 within ten years.

Some that we can see just over the horizon are mere toddlers who are today having their first brush with what is to them a surprisingly unfriendly environment and reacting to it badly and in a manner that is significant; nearer is the boy or girl just beginning to edge away from the crowd; the boy who has just found the false way around an obstacle; the lad who is beginning to doubt himself, but who is finding an explanation of his failure in the unfairness and unfriendliness of others; the boy or girl who today has just dropped his or her head in unhappy recognition of his or her inferiority, or the other fellow in the group who has just thrown up his head, frightened at the inadequacy he has found within himself, but who has buckled on an armor of self-defense, stands breathing defiance and ready to challenge authority. With increased puzzlement and confusion, misery and un-

happiness, pitiful and tragic, these boys and girls will be moved along toward us year by year. Inefficiency, failure, and humiliation will be heaped upon them. As, without understanding and without guidance, they are pushed forward by the crowd about them, it will be but an accident whether some first reach us or the prisons. But in the years that are to intervene parents will labor with them, the schools will work with them, the judges of the juvenile court and the probation officers will do the best they can with some, and with some the higher courts, reformatories, and prisons will have to take a hand. Energy and money will be expended without avail upon them. But whatever the intervening steps, the end is failure. How difficult of readjustment they will be when once they reach the reformatory or finally find a refuge with us! And yet, pliable as they are today, how simple in many cases would the readjustment be now—how simple the psychiatrists who met yet more difficult problems of readjustment in the army know, and Campbell and Richards in Baltimore, Glueck and Brown in New York, Healy and Bronner in Boston, and Dr. Read and Dr. Bronner here in San Francisco, who in school or in court have worked with these children, have pointed out. We are inclined to think of these individuals in the terms of end reactions as we see them on their admission to the hospital, and to be discouraged; it were better did we think of them in the terms of beginning reactions.

Until this situation is brought under control, hygiene must not puff itself up or be too proud in spite of the great victories that have been won in other directions. In meeting the issues involved in the problem of nervous or mental disease, two notions, quite generally current, must be met at once. The first, that all are created equal. I think this need not be discussed at any length here for surely there is no one in this audience of public health workers who believes

that individuals are born equal, either physically or mentally.

The other is the implication in a "sound mind in a sound body." It is not true that a sound body means a sound mind. Nobody, probably, believes it to be true. But public health organization, education, and propaganda would seem to be planned on the assumption that it is true. A neurotic patient is neurotic whether he has malaria, typhoid, tuberculosis, or hookworm, and while his infectious ills will add to his burden, his neuroticism is seldom, if ever, dependent upon it, and cleansed of his infection, he still remains neurotic.

Conceive a bright, sensitive little chap in the grade school. His adenoids and tonsils are of the most approved model; his nutrition is good; he has no congenital syphilis; it is not possible for him to contract any infectious disease because since before he was born, these diseases had been wiped from the earth and are now but medical curiosities. There is no reason why the boy should not develop into a young Apollo. But he will not. Because of bad mental habits begun in early childhood in his millennially healthy home and fostered in his perfectly ventilated school he is headed straight for social and economic perdition. And nothing in the present plans of the Federal Public Health Service, the American Public Health Association, or the State or County Boards of Health will save him. In ten years he will be a permanent charge upon the State and for an indefinite time. For him and thousands like him, the State will maintain expensive hospitals. The State will lose the possible social and economic contribution to the life of the community it expected when it planned its expensive campaign to keep him physically healthy; it will lose the amount it invested in its carefully, but none too wisely planned education. Instead the State will pay out other large sums, over a period of probably twenty or thirty years, in housing him,

clothing him, feeding him and in salaries to a corps of physicians, nurses and attendants to look after him. And this expenditure will not be an investment. It will no doubt be a dead loss. Its only excuse will be to ease the conscience of the community for the avoidable ill the community in its lack of wisdom and foresight let fall upon him. It will be a credit to the community's heart, not its head.

The greatest need in the field of mental hygiene is for a better understanding of the individual and of the significance, both in a social and personal way, of individual reactions to the events of everyday life. These reactions are important in all walks of life, but are particularly important in relation to certain major social problems which so frequently involve the mentally defective or diseased, the psychopath and the mentally and nervously unstable. In order that organizations and authorities, dealing with the individuals who create these problems, may have access to such expertness in these matters as exists in a community, it is necessary (1) that such facilities for the study of asocial individuals as exist be made more accessible. This can only be done through the passing of laws by the state legislatures that will permit voluntary and temporary care admission to state hospitals and provide for temporary commitment to such hospitals for the purpose of observation. Such laws (now on the statute books of many states) are of inestimable value to workers in all fields of social work and workers should be sure that they are familiar with them; (2) that the facilities for the study of asocial individuals be very greatly increased. These facilities are the psychopathic hospital, the psychopathic wards of general hospitals, the psychiatric clinics in connection with courts, prisons, and reformatories, the out-patient departments of state hospitals, the community mental hygiene clinics in communities where none of the other facili-

ties exists, and psychiatric social service in connection with all; (3) that the facilities for the training of those who are to undertake the study of the asocial individual be increased. This means an increase in the amount of time given to the teaching of psychiatry in the medical schools, social psychiatry and mental hygiene in schools of social work and normal schools.

Our knowledge of the individual, his personality and character, and of those forces, within and without, which, playing against each other, turn a social into an asocial individual, is not, of course, complete, but there exists a body of facts that is of tremendous value in meeting the practical issues involved in social problems. Research along these lines must be continued and facilities for such research increased, but in the meantime, much will be gained by a wider dissemination of our present-day knowledge among those groups and organizations dealing with the individual in connection with one form or another of social problem. A closer contact should be developed between these groups and organizations and those in the community—the psychiatrists—whose professional work brings them this special knowledge. This can be accomplished by psychiatrists accepting positions advisory to local groups and organizations.

One fundamental principle should be kept in mind by all who are dealing with the individual and social problems. In a personal crisis the particular thing that has happened to an individual is not necessarily the most important factor in the situation—rather, the individual and personal mental reaction of the person to that thing. An individual is prone to feel that the crisis in his own life is unique; that no one ever had to meet just such a situation. But the chances are that the situation is not unique, that very many have had to face exactly the same combination of circum-

stances. A crippling accident, the development of a dread chronic disease, the loss of a fortune or of a loved companion, disgrace—these are not the crux of the situation, but the individual reaction to them. And each individual will react differently. The permanence of any particular experience, its final impression on the personality and character of the individuals, *and whether the situation will develop or is likely to develop consequences of a social nature likely to be important and probably of very great importance to others than the individual (to the social group)* will depend upon the forces at work in the personality makeup of the individual. It is of the greatest social importance, therefore, that the elements which go to make up the personality and character of the individual be understood and that when crises become unmanageable or are likely to bring social consequences there be at hand agencies capable of rendering expert assistance.

No other group of diseases affects so

fundamentally social life. Their very nature makes this so. In no field are greater responsibilities placed upon the physician. The problem of nervous and mental disease and the social problems associated with them are in large measure controllable. It need not become necessary for 60,000 new patients to enter the hospitals each year; it need not be necessary for the states to expend \$60,000,000 each year for the maintenance of patients; the progress of the average child in school need not be interfered with by the mentally defective child; courts and reformatories need not forever be hampered by the psychopathic repeater. This day there exists sufficient knowledge upon these subjects to make an appreciable attack upon these conditions. It is not lack of technical knowledge that impedes, but lack of diffusion of this knowledge in the community. Diffusion of this knowledge is a responsibility of agencies for public health education.



Developing Plants to Help Fight Leprosy.—The Bureau of Plant Industry of the U. S. Department of Agriculture is now at work developing plants which produce the chaulmoogra oil used by the U. S. Public Health Service in its fight against leprosy. True chaulmoogra oil is obtained from the seed of a tree known as *Taraktogenos kurzii*, which grows in Burma. Three other trees have also been found by scientists to yield a similar oil from their seeds. They are the *Hydnocarpus anthelmintica*, *H. wightiana*, and *H. heterophylla*. In 1904 the physiologically active acids were separated from the seeds of the first two trees. These acids, designated as chaulmoogric and hydnocarpic

acid, respectively, were identified with the corresponding acids of true chaulmoogra oil. The ethyl esters of the acids, which is the form in which the remedy is used by the Public Health Service, were also developed about the same time. Seeds of the *hydnocarpus* have recently arrived at the Bureau of Plant Industry from Siam. They will be sent to Florida, Porto Rico, and Hawaii to be propagated. While the medical treatment of leprosy has so far been with the true chaulmoogra oil, the *hydnocarpus* may produce seeds which will also be of great value in this connection, and it is for such possible use that the trees will be grown.—(J. A. T.)



Not too early to be thinking about the Fifteenth Annual Meeting of the A. P. H. A. in New York City, November 14-18, 1921.

SYMPOSIUM ON MENTAL HYGIENE

II. RELATION OF PSYCHIATRY TO PUBLIC HEALTH

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Read before joint meeting of Public Health Administration and Sociological Sections, American Public Health Association, at San Francisco, Cal., September 17, 1920.

Dr. Reid argues that if the medical profession had performed its duty by the mind as well as the body, Mrs. Eddy would not have been heard of outside of New England. Prevention and treatment of mental deficiency are problems for medical men, and the sooner this is realized the better for both community and profession.

DR. WILLIAM A. WHITE has very aptly remarked that Hygiea, the goddess of health, was the daughter of Æsculapius, the god of medicine. If preventative medicine had a goddess it would be recorded that she was the daughter of Hygiea and that she was born about the middle of the nineteenth century. Mental hygiene is the last branch of preventative medicine to receive attention. It would seem, therefore, that the problem of preventative medicine had been approached from the wrong end. The success of any project for the promotion of public health depends primarily upon the psychological attitude of the individuals in the community. This is particularly true in regard to the prevention of venereal disease, tuberculosis, malaria, yellow fever, hookworm and typhoid fever.

The mentally afflicted, the most helpless of all sick, have long been the neglected stepchildren of the medical profession. Long after the profession had educated the public to the point where they were building beautiful hospitals, well-staffed and well-equipped for the care of the physically sick, the mentally sick were still being cared for in jails, penitentiaries and poorhouses. Following this era came the period of state hospitals, politically controlled. For half a century the mentally sick were considered the legitimate prey of the politician. Superintendencies of state hos-

pitals were given out as awards to men who were medical failures, but political successes. These men in turn installed all their political friends in positions of importance in the institutions, irrespective of qualifications or experience. We are now emerging from this era as far as hospitals are concerned, but in nearly every state the mental cases are still being handled by the sheriff and his deputies before they reach the hospital.

It is a strange fact that in America all the epoch-making reforms in the care and treatment of mental cases have been initiated by the laity and not by the medical profession. Among these reformers may be mentioned Mrs. Packard of Illinois and Dorothy Dix, who was instrumental in having, in twenty states, the mental cases taken from jails and placed in hospitals; also Mr. Clifford Beers, who was instrumental in founding the National Committee for Mental Hygiene, engaged in the betterment of the condition of these unfortunates.

It is only recently that psychiatry has been given a place in the curriculum of the medical school, and in most schools instruction in that subject is still hopelessly inadequate. I do not know of a single medical school that mentions psychology as a premedical requisite. "Whatsoever a man soweth that shall he also reap," says the Bible. The neglect of psychology and psychiatry by the medical profession has proven a boomerang

that has returned, bringing with it humiliation, loss of prestige and money. The church attempted to fill the long felt need of humanity which medicine ignored, with what result we all know. If the medical profession had done its duty by the mind as well as by the body of man, Mary Baker Eddy would never have been heard of outside of Massachusetts. Every year the medical profession of California spends large amounts of time, energy and money to combat destructive legislation which is being pushed by a dozen sects and creeds,—anti-vivisectionists, anti-vaccinationists, anti-school examinationists and anti-everything that makes for the promotion of public health. The ever increasing strength of these cults is the direct result of the fact that the medical profession has persisted, and still persists, in ignoring the great fact that the mind can influence the body.

The importance of the subject of psychiatry to the health of the nation was shown during the recent war. In the causes of rejection of applicants for admission to the army and navy, nervous and mental disease stood fourth on the list. Besides those rejected, 72,000 unwounded men were useless in the army because of nervous and mental affections.

With the exception of nine, every state in the Union shows a steady increase in mental disease in proportion to the population. In one state the proportion has quadrupled in ten years. The burden of supporting the institutions for the mentally defective and diseased is yearly growing greater, and the time is coming when the public will demand from the medical profession some solution of the problem. In addition to \$50,000,000 spent yearly in the United States for the care of these unfortunates, a large part of the budget of every state, county and city goes to the support of institutions for those who constitute the "social problems."—the indigent, the delinquent, the criminal, the venereally dis-

eased, whose ranks are largely recruited from the mentally defective. The reason we have not been more successful in solving these problems is because we have gone at them from the wrong end. To deal with them simply by building almshouses, reformatories, jails, penitentiaries, detention homes and venereal clinics, is like trying to rid a field of weeds by cutting off the tops instead of digging out the roots. The roots of all these problems lie in the minds of the individuals, and effective work can be done only by dealing with these individual minds, and doing it early.

The human body is in a constant state of readjustment to environment. It must adapt itself to constant changes in temperature, humidity, altitude and food. The eye, the ear, the digestive tract are constantly adjusting and readjusting to meet the demands put upon them. When this adjustment ceases to take place the organ becomes unhealthy, sick. So also with the mind. As life becomes more and more complex, the demands for mental readjustment become more frequent and more urgent. The psychiatrist sees in the world all types; the completely adjusted whom we call normal, those who make a partial adjustment, and those who fail utterly. The last named are found in the almshouses, the correctional institutions, and the hospitals for mental disease. Those who are known to the world as the "insane" are the individuals who failing entirely to adapt themselves to the ordinary environment of life, have created an environment of phantasy in which they can live. Their rules of conduct differing from those of organized society, they must be segregated.

The pauper is another example of complete failure of adjustment due usually to mental abnormality. My experience has been that poverty which is not due to sickness or accident is practically always due to mental peculiarity, deficiency or disease. The tramps and

hoboes that have come under my observation are either feeble-minded or cases of *dementia præcox* with deterioration. Surveys of various institutions for criminals show that the percentage of criminals mentally deficient or diseased ranges from 25 to 50 percent. The percentage of prostitutes is even higher. The whole question of venereal disease is intimately related to the subject of psychiatry. General paralysis and cerebral syphilis form from 15 to 20 percent of the admissions to all state hospitals. To what extent syphilis is responsible for congenital defects,—idiocy, imbecility, feeble-mindedness and epilepsy, no one can estimate. The two form a vicious circle. Syphilis produces mental deficiency and disease and mental deficiency is largely responsible for the spread of venereal disease.

Between the class of individuals who fail utterly to adapt themselves to the ordinary environment of life and the so-called normal who makes a satisfactory adjustment, there is a great army known to the psychiatrist as the "borderline" cases. These are the hysterical, the neurotic and psycho-neurotic, the paranoid types, the emotionally unstable, the inefficient, the morally and ethically deficient.

Just as the human body, however robust, may break down under sufficiently adverse conditions, so the strongest mind may give way if the stress and strain of life becomes too great. This was illustrated during the recent war. A Canadian, a Lieutenant in the Royal Army Flying Corps, was a prisoner in Germany for two years, and had endured all the mental anguish that could be devised by German "Kultur." He stated that in the camp which was largely composed of British aviators, men who were picked for their mental and physical stability, not one of them remained normal mentally. They were all afflicted with what he called "barbed-wire madness." He said he had seen one of their best men

weep all day because he broke a teapot which had been sent to him from England. Every human mind has a breaking point. The borderline cases are individuals whose breaking point is lower than the average. These are the individuals who fill the churches of new and strange faiths, who haunt the lecture rooms and offices of the "practical psychologist," the "divine healer," and the "faith curist." They fill the offices of doctors and the free clinics, they form the center of numerous problems in industry, in business, in society and in the home.

The psycho-neurotics are individuals in whom there is an inherent weakness which makes it impossible for them to stand up under the ordinary stress and strain of life, and their subconscious minds take refuge in some physical disability that will relieve them from this stress and strain. In the subconscious mind of many there is a craving for attention, sympathy and solicitation. Subconsciously the psycho-neurotic simulates some form of physical disorder to obtain these. In other cases it is to escape from an intolerable situation or an congenial employment. In the army these were known erroneously as cases of "shell shock."

It is now being discovered that psychiatry has an important place in industry. One of the first to call attention to this fact was Carleton Parker, who stated that modern labor unrest has a basis more psychopathological than psychological. In an analysis of the I. W. W. he decided that the thwarting of the instincts of the workman brought about a state of mind that amounted to an "industrial psychosis." Dr. Adler recently made a study of 100 men between the ages of 25 and 55 who had a history of continued unemployment. He found that they could be divided into three types. Forty-three percent belonged to the paranoid type,—the individuals who have an exaggerated idea of their own

importance, are suspicious, contentious and nurse a grievance against the world in general, and their employers in particular. Thirty-five percent he classified as cases of inadequate personality,—the feeble-minded and the victims of mental disease of a deteriorating character. Twenty-two percent belonged to the emotionally unstable type,—the individuals who have mild elations and depressions, who are at one time cheerful, optimistic, talkative and officious and others depressed, pessimistic, uncommunicative, lacking initiative, and loath to undertake responsibility.

These types are seen not only in industry but in every walk and condition of life. The presence in the home of an idiot, imbecile, epileptic, alcoholic, drug addict, or a psychopath, creates an abnormal atmosphere which usually interferes with the peace, happiness and progress of everyone in it. No one except the psychiatrist who visits the homes of these individuals can realize what a multiplicity of problems such a person can create.

The paranoid type of person may wield a tremendously disturbing influence, not only in the home, but in the community, the nation and the world. One such person may sow the seeds of discontent and distrust in an industry or business which may spread to thousands of employees and eventually destroy the harmony of the entire enterprise. There is no question that much of the industrial unrest at the present time is the result of the agitation of this type of person. Many of the so-called religions of the present day were founded by paranoiacs possessed of the delusion that they were specially ordained of God to save the world. How much the epilepsy of Cæsar and Napoleon had to do with the wars in which they were constantly engaged is an interesting subject for speculation. The historians of the future will doubtless show the influence of the personality of the former German Kaiser

in inducing a national paranoia which resulted in the recent world war. A psychiatrist would probably find a rich field for investigation in the minds of the leaders of the Irish agitation and the Russian upheaval.

Having considered the increasing importance of the problem of mental deficiency and disease to the financial, industrial, and moral and physical health of the community, the public health worker naturally asks: "What is the remedy for such a situation?" In the prevention of mental deficiency and disease, I would mention

First: Eugenics and Euthenics.—

The positive phase of this question is the conservation of the fit. Tennyson says:

"Even the homely farm can teach us

There is something in descent."

When the eugenesis of man is given as careful and scientific attention as the breeding of plants and animals, there will be hope for the improvement of the race. Every public health measure that improves the sanitation and hygiene of the community makes for better mental health. Among the preventable physical causes of mental disease are syphilis, pellagra, tuberculosis, fevers, toxic conditions, lead and gas poisoning, head injuries, mal-nutrition and unhygienic conditions in homes and factories.

The negative side of the question is the prevention of the propagation of the unfit. We say "every child has a right to be well born." The child of the mentally defective or diseased is handicapped from the start. California is the only state in the Union that has a perfectly good working law for the sterilization of the feeble-minded and the insane. Over fifteen hundred sterilizations have been performed in the state hospitals and the Sonoma State Home. This law has proven itself an "unmixed blessing." Aside from the eugenic benefit there are hundreds of feeble-minded and psychopathic women in California who are leading comfortable and useful lives out-

side of institutions because the stress and strain of childbirth and bringing up a family have been eliminated.

Second: Restriction of Immigration and Change in Deportation Laws.—One-third of all the patients admitted to the state hospitals of California, and 48% of the patients in the New York State Hospitals, are foreign born. Canadians have just discovered that half of the feeble-minded in Canada are of foreign birth. Anyone who has visited Ellis Island must be tempted to ask "Why close the Golden Gate and leave Hell Gate wide open?" To watch the thousands of low-browed immigrants, unkempt, unlettered and unstrung, filing past the psychiatrist who is attempting to pick at a glance the mentally abnormal, is to realize what a farce the mental examination of immigrants must necessarily be. The most expert psychiatrist in the world could not pick the normal from the abnormal, for the reason that with the exception of the low grades of feeble-mindedness, some cases of *dementia præcox* and advanced cases of general paresis, the average mental case shows nothing that would differentiate him from his fellows. For this reason the deportation laws should be changed. In my opinion anyone who becomes a public charge by reason of mental deficiency or disease at any time before he becomes a citizen of this country should be deportable unless it can be definitely shown that the cause of the psychosis arose subsequent to landing.

Third: Education.—Psychiatry being a comparatively new science, there is a crying need for a campaign of education on the subject. This education must begin as has all other matter pertaining to public health, with the medical profession, nurses, and social workers. An Italian woman, a high grade imbecile, was recently committed to Sonoma State Home, and deported to Italy. She left behind her as a legacy to the city of San Francisco, eight illegitimate children. Of

all the doctors, nurses, and social workers who had handled this case during her eight pregnancies and confinements, not one, except the last had the knowledge or interest to handle the case intelligently. The psychiatric clinic is largely dependent for its patients upon the other clinics and the social workers. It is therefore essential that these workers and the doctors in the other clinics know something of psychiatry.

The popular demand for information on the subject of mental hygiene is shown by the number of lecturers everywhere holding forth on the subject. One writer has said, "The cry of the mentally afflicted has brought the response of the charlatan." The cities on the West Coast of the United States have recently experienced a perfect wave of "psychology." All types of lecturers have been represented, from the college-bred psychologist to the wild-eyed devotee of the ouija board. They promised to do anything for their patrons, from transforming the personality to finding a husband or wife. Their success consisted in separating their patrons from large sums of money in return for which they administered liberal doses compounded of equal parts of flattery and euphonious platitudes.

Fourth: Clinics and Hospitals for Early Cases of Mental Disease.—Having conducted a psychiatric clinic for five years at the University of California, I know positively that such a clinic can be made a powerful factor in the prevention of mental disease. To such a clinic are referred by the other clinics (if the doctors are at all conversant with the symptoms of mental disease) the early cases, the budding psychoses and psycho-neuroses. To do effective work such a clinic must have a staff of specially trained social workers. Many of the borderline cases previously described, who, break under the stress and strain of life's problems, can get along comfortably in a

modified environment. This the social worker can help provide. The Social Service Department of the Boston Psychopathic Hospital reports that during two years, 29 patients were saved from commitment to state hospitals. On these patients alone, the State saved enough to pay the salaries of the entire social service department and several hundred dollars over.

Any form of disease except mental disease can be treated in the hospitals of San Francisco. For the mentally sick there is no place but the State Hospital. In order that a patient may receive treatment there (unless he will go voluntarily) a member of the family must make an affidavit that he is dangerous to "life, person, or property," a warrant must be issued, he must be placed under arrest, detained under the care of the sheriff for 24 hours, tried in open court by a judge of the Superior Court, and taken to the hospital by a sheriff's dep-

uty. Consequently commitment to a state hospital is a last resort and mental cases go untreated until they actually become a public menace. Very often the attention of the authorities is called to their condition by the actual commission of a crime. The same condition of affairs exists in many other cities throughout the United States. Clinics and hospitals for the mentally sick should be as plentiful and as easy of access as those for surgical or medical cases.

There is in psychiatry a great field of preventative medicine yet untouched. The neglect of the subject by the medical profession has resulted in the conditions I have described. The problem of the prevention and treatment of mental deficiency and disease are medical problems and must be handled by the medical profession. The sooner we face these problems and undertake their solution, the better it will be for the community and for the profession.



ROCHESTER'S TONSIL-ADENOID CLINIC



On another page there is sketched the story of the Tonsil-Adenoid work among the children of Rochester, N. Y. One of the important factors to such an enterprise is the means of getting the children to and from the clinic. This illustration shows the means that has been developed by the Women's Motor Corps of the city. At first the members of the corps, one of whom may be seen in uniform in the picture, drove the automobiles themselves. At the present time the citizens of Rochester send their autos with their own chauffeurs to perform this service. Dr. Harvey J. Burkhart, Director of the Rochester Dental Dispensary, in which the clinics are conducted and the operations performed, is standing near the front wheel of the machine.

SYMPOSIUM ON MENTAL HYGIENE

III. SOCIAL ASPECT OF MENTAL DEFECT

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Read before the Sociological Section, American Public Health Association, at San Francisco, Cal.,
Sept. 16, 1920.

THERE are many who think of mental defect simply in terms of intellectual defect and consider the social problems related thereto in terms of early diagnosis by Binet or similar tests, segregation in industrial colonies and sterilization of these "unfit" persons with the expectation in a generation or two of eliminating the unfit from society altogether. But, I would remind them that the human mind is more than mere intellect, that defects of emotional and volitional nature lead people into conflict with society and into misfitted situations more easily than does mere stupidity, and that such forms of mental defect are not readily discovered in time to forestall their results. The only adequate test to determine who is fit or unfit to live in normal society is life. No other test can do real justice. We cannot overlook the fact that many stupid people who were backward in school and who would obtain a very low rating from the intelligence tester are doing a great deal of the necessary work of the world and have never been in jail. Some of them got into the army in the late war in spite of us and gave good service in humble capacities. Those of the army who are now the most serious post-bellum problems are those whom we call "borderline" cases; psychopathic personalities of unstable makeup; men whom we had no adequate way of detecting until they had been tried out and found wanting. And it is very interesting to note that in civil life also, the more the degree or kind of mental defect approaches the borderline between normality and abnormality the more of a social problem it becomes, and

this is particularly true in relation to delinquency and to problems of vocational education. The grossly feeble-minded we can easily detect and fairly well provide for educationally and industrially. But I repeat that they are not our most serious social problem. Much more difficult to deal with are they who get these of feeble intellect into trouble!

I will grant that because of the imperfectness of normal society the feeble-minded are safer and more happy and more useful members of society if under supervision in special schools and colonies and in supervised industries, and facilities for so placing them have got to be extended as society becomes more complex and competition more stressful; but this is for the purpose of protecting them in the majority of instances. I will admit that crimes of violence and rape are committed by the grossly feeble-minded, but not in the majority of instances. If all those, the world over, who could be diagnosed by routine tests as "feeble-minded" could at once be segregated and sterilized we would continue to have with us in succeeding generations not only others like them but many more of the unstable psychopathic type who would be our most perplexing problem in education and in criminology.

From the standpoint of the prophylaxis of such problems this topic involves the subject of heredity and eugenics and all that these words entail, e. g., the effects upon the offspring of disease acquired by parents, particularly syphilis and alcoholism; the condition of the mother during pregnancy; the ages of the parents at the time of conception of

the child; the skill of the attending obstetrician; the effects of acute infection in early life upon the central nervous system, e. g., encephalitis; the effects of emotional trauma upon the child as conducive to bringing about a morbid personality, the mental cruelties or tactlessness of parents and teachers inducing psychopathic traits and hence vocational handicaps and delinquency. And so we might go on in discussing the various causes of mental defect in its broadest aspects. The subject dovetails with every other department of medicine and sociology; it involves all phases of social activity—the schools, industries, courts of justice and the individual relationships in family and community.

But in spite of the latitude of our subject I feel it worth while to consider briefly a few concrete matters involved in the title of this paper, which pertain to the practical management of some of the results of the various types of "mental defect," or as I would prefer to say, "socially defective personalities." By so doing I hope to escape the accusation of having said nothing constructive whatsoever.

What is the scope of the possible practical efforts toward controlling the social results of all forms of mental defect?

In the first place much might be done to get at the problem in its earliest development by means of a widespread establishment of school clinics in which trained psychiatrists with the aid of social workers and teachers will have the opportunity to estimate accurately the mental development and the personality of all children. In such clinics the subnormal, abnormal, neurotic or exceptional child could be kept track of, frequently seen and individually provided for, either in special classes, special types of school, or in institutions for mental defectives if this were inevitable. Such children as were found to be unamenable to education or control outside of an institution could then be registered in a

central clearing house and later placed in such institutions with the consent of their parents or guardians, or the juvenile court when under such jurisdiction. There is nothing Prussian or un-American in this. We already have school control of contagious diseases and mental defect is also a matter of public health. There should be and could be such a clinic in every primary and secondary school. The central clearing house would not be only a registration bureau for the purpose of knowing who and where are the mentally abnormal, but would also be a clinic in mental hygiene for those who had passed the school age and were still struggling in the outside world with their handicaps. It would need to be affiliated closely with the city or town health center and, where such existed, with the medical school of the state or private university; because this is a medical problem and its solution demands the coöperation of the various departments of general medicine.

It is in childhood and adolescence that we can best get results or prevent the social consequences of mental disorder, and often much can be done for the individual at this time by a change of environment or management in school and home to prevent the development of nervous and mental breakdown or criminality. Already we are doing something along this line in our juvenile courts and yet how few juvenile courts there are! Surely those already established have proved their worth, especially in places where the service of a psychiatrist has been used. And if in the juvenile court there is a great need of such service, why not in the adult court? Why not in the jail and penitentiary? Until we have the medical and hospital atmosphere in all these places combined with the vocational-educational atmosphere and the spirit of honest and thorough attempts at correction rather than punishment or simply custody, we cannot hope to reform or rehabilitate delinquents. What

is there in the atmosphere, physical or mental, of the average jail or prison or police court that tends to influence the delinquent to live at peace with the social order?

And then there is the industrial world. Many misfits through no real fault of their own wander from job to job to the detriment of economic production because there is nobody at hand who understands them or can make them understand themselves and be understood by employers of labor. Psychiatric service has a great field before it in the world of industry and in the technical schools for vocational training.

During the war when national necessity demanded it, the service of psychiatry was pre-eminent and its work recognized as of equal importance if not more importance than any other department of the medical corps. Through its aid, most of the unfit were eliminated from the firing line before they reached it and were placed where they could be of some service to their country, and often to their own great advantage and happiness. Many others were so placed after having been found wanting in the first line of defense because psychiatric service was made available from the trenches to the home training camp. And so it should be in civilian life. Here the training camp is the school and the home; the line of communication is the employer of all forms of labor; the firing line is the factory, the department store, the business office and all social contacts. After one has reached the firing line or trenches of civil life and mental defect becomes apparent, the first-aid station should be a psychiatric consultant available at all times to the employer or a community mental hygiene clinic connected with the local hospitals; and in such hospitals there should be as much provision made for the care of mental disorder as for physical disease. Mental disorder is too important to be left to the care of the police and its accurate diagnosis too intricate a matter to be in the

hands of the judge or lay jury as is now the case in so many instances when mental defect or disease has led to crime.

The harvest for psychiatric workers is always ripening but the laborers are all too few because so few physicians are interested or educated in psychiatry. Those who are interested and so trained are usually isolated in the state hospitals looking after the end products of mental disease. If these could be released for social service in a wider sphere and men who want to learn psychiatry could take their places and in turn serve their apprenticeship for outside service, the needs we have been discussing might be met in some measure. But this is a problem for the medical schools and can only be indicated in this paper.

CONCLUSIONS

I. In order to ameliorate or prevent the social embarrassment caused by all forms of mental defect, such defects must be viewed and studied in terms of personality and not viewed simply as intellectual deficiencies.

II. Not only teachers of school children and college students need very much more training in pathological and normal psychology, but prospective physicians also. Such training will result in more attention to the individual and less and less impersonal, machine-made methods of education, and in a larger and better supply of psychiatric social workers and physicians for the ever widening field of psychiatry.

III. The field for psychiatric service needs to be recognized more seriously by all courts of justice, by penal institutions, relief agencies and the general public.

IV. Hospital or clinical facilities for the diagnosis and care of mental troubles are absurdly inadequate throughout the country compared with the facilities for the care of less important illness. But it is practicable by organized effort to provide adequate facilities as was proved in the recent war when in an army of

over a million men at a distance of three thousand miles from the base of supplies, and under the trying conditions of offensive warfare, medical care of mental disorders of every type was as adequate as that for any other form of disease or injury. It was the appreciation

of the need that brought this about. It is the lack of understanding of the importance to society of psychiatric service and the need for better care and earlier diagnosis of mental illness or congenital defect that prevents progress along these lines.



FOOD INSPECTION IN CLEVELAND

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Read before Food & Drug Section, American Public Health Association, at San Francisco, Cal., September 16, 1920.

A municipality calls to its aid the scientific resources and responsibility of a university in carrying on departments sometimes subject to political interference. Western Reserve University cares for Cleveland's food and drug inspection, milk and meat expected. This coöperation means excellent service for the city and a high standard of laboratory work for the college.

IT is not the intention of this paper to give any detailed account of the amount of work done, but it is presented to emphasize certain principles which with us have been carried out with some measure of success.

The plan of operation of the food and drug inspection and of the laboratories in general differs somewhat from that in use elsewhere. We do not pretend any originality of conception, but have been following out lines laid down ten years ago before there was any chance even of attempting them, and we believe that we were justified in laying them down.

In the first place, I believe that wherever a university can come into direct and practical touch with the activities of the community in which it is situated, there is a mutual benefit. The community gains the services of non-political experts, and the university becomes more humanized. If this be true at all, it will

be most true in the relations of the medical department to the health department of the city. A distribution of time between the medical school and the health department tends to free the latter from political influence inasmuch as the greater security of tenure in the university gives a greater independence. Where a man is independent of his post and where replacing him by a full-time incumbent would result in increased strain on the city budget, he will usually be let alone.

It was on this basis and with this belief that Western Reserve Medical School in 1901 allowed part of the time of the Professor of Pathology and Bacteriology to be spent in the formation and administration of a public health laboratory in the Cleveland health department; later this work was transferred to the Department of Hygiene and Bacteriology, where it now is.

In the second place, I believe that specialization to the Nth power of the type which is more and more exploited in modern affairs is a mistake. Although the subdivision of work so that each man does a limited portion without knowledge of or interest in the whole problem may actually allow of the record of more specimens or inspections, the loss of initiative and interest will, in the last analysis, counteract this apparent increase. We all acknowledge that the closely limited specialist in medicine to whom a case is brought for examination will often err in prognosis and treatment in a manner, to say the least, conspicuous, and I believe that a wider knowledge of the general conditions of the case will stimulate the work of the man who himself actually attacks only a specialized portion. The modern tendency to turn a man into a machine, as exemplified in its full beauty in some of the great manufacturing establishments, even if it be necessary there—which from the standpoint of human development and endeavor one may be permitted to doubt—should not obtain in health work.

It was in part on the basis of this idea that the food and drug inspection of the city was turned over to the laboratory bureau, with the exception of meat and milk. The final disposition of the cases, the court evidence and so forth, depend on the man who collects and inspects and the man who examines the specimens. If it be possible for each to have an inside and an outside view, and if my thesis is correct, there should be an increase of efficiency on this basis. It will be urged that this knowledge of the case will tend to bias in the reports, but so far, in the experience of years, no instances of this have come to the light.

With the exposition of these two theses, namely, that the university and the municipality are mutual gainers by the combination, and that specialization tends to be excessive, we will pass to actual conditions and try to see what

light they throw on these ideas and their carrying out.

Milk inspection from the farm to the retailer and meat inspection, both of which require the services of a veterinary, are carried on in the Meat and Dairy Bureau, under a competent chief veterinary and a staff of inspectors. The type of inspection is similar to that in the other large cities and will not come under consideration in this paper. Inspection of the meat and dairy products is also carried on by these same inspectors in the markets and elsewhere, and where the food handler handles a variety of goods, our inspectors assist those of the Meat and Dairy Bureau as far as they can. All other food inspection and all the drug inspection are placed under the city chemist, who reports to the health commissioner through the chief of the bureau of laboratories. The work is carried on under the Federal Pure Food and Drugs Act, and we have just succeeded in passing a health code which will strengthen our powers in this work. The staff consists of the chief chemist and assistant chemists who must all be college graduates, with two assistants and two stenographers. In addition to the actual health work and food inspection and analysis, the laboratory cares for the chemical work of the Department of Public Service, including garbage disposal, together with cement testing, gas testing, etc., and gives services to the department of public safety, involving much detailed analysis of confiscated materials and suspected poisons. It also cares for the analyses for the civil service and, in fact, does all laboratory work for the municipality except what is done in the water works laboratory at the filter plant. A notable part of the expert staff is employed constantly on this work, and paid in part by the departments served. One of the graduate chemists is also a pharmacist with ten years' practical experience, and to him has recently been given charge of a large part of the narcotic work of the city. There are six

inspectors, detailed from the sanitary police for permanent duty save in case of sudden epidemic emergency. Those who show proficiency are retained and inasmuch as the work is made interesting to a degree greater than in other activities of the sanitary police, there is a marked rivalry for the posts. The inspectors are taught the relative value of the actual food inspection and of the sanitary inspection, together with some idea of what part of the work is really health work and what part is more truly a question of business honesty and economy, and are expected to report on all the details of a food handling establishment which concern the health department. When such a food-handling establishment is of a special type such, for instance, as a bottling works, the food chemist takes up with the inspector the special adulterations or other lapses from legality which he may expect to find, and indicates proper labeling for the product under investigation. Weekly conferences are held with the Chief Chemist, at which a certain amount of reading is suggested, and such informal meetings keep up the interest and increase the efficiency of the inspectors. These are also encouraged to discuss with the chemists the findings in the cases on which they are working and we find that this knowledge of the case is a very definite stimulus, and helps materially when the cases come to court. Perhaps, however, the greatest value in this relation of the inspector to the case is that with it he is able to discuss the question intelligently with the dealer and that, as a result of this, many cases are kept out of court. In view of the amount of time which can be wasted on the most ordinary court case, and the very small size of our staff, this is a matter of no slight importance. In a similar manner the samples for pharmaceutical examination are collected by the man who is to examine them, and his special knowledge admits of condemning many specimens by organoleptic tests, as was actually the case during

the war, when Cleveland as well as other towns was flooded with fake drugs.

The special training of the inspectors has been part of the reason for our very close relation with the Federal inspectors, whose acceptance of our reports and whose assistance in speeding up matters would not have developed with the ordinary type of inspection.

All the men from top to bottom are trained to the belief that most cases can be settled without resort to police authority, and that the test of the efficiency of a department is not the number of successful prosecutions, but the actual improvement of the conditions. There are always two sides to a case, and I still hold the conviction that most of the offences against these special laws and regulations are not malicious, and that a heart to heart talk from an inspector who has this attitude will often bear fruit. Where this fails, an interview with the Chief Chemist in his office will usually bring about reform, when the offender can be made to understand that he is not being persecuted, but that we must enforce the laws.

This method we also work by the upstairs route, so to speak. The manufacturers and food dealers have come to believe that we are straight with them and do not play favorites, and now when they have new products to put out, they come to us with the formula and label and ask for our approval. This is done with the mutual understanding that if samples on the market do not come up to the standard we are free to prosecute, but in four years that has not occurred. One of the ways in which we have gained the confidence of the wholesalers is in connection with the inspection of car-load lots at the freight depots, which gives the Cleveland merchant a chance to refuse a bad shipment and prevents a good deal of trouble for him. We have also made it a point to explain ourselves to the manufacturers' associations such as the bakers' and the druggists' organizations, explaining the law and our

duties, and asking them as civic bodies to assist us in the civic work. After a natural period of hesitancy this has worked so well that our staff is in great demand as speakers at their large meetings, and where we had to force our way in as exhibitors in the Food Shows, now we are urged to exhibit. Our propositions, even when they involve the expenditure of a good deal of money, meet with a ready response after they are explained, as may be illustrated by an instance. We felt it necessary to have all the baked goods exposed for retail sale covered to prevent the access of flies and also the handling of the would-be customers, and before any orders were issued we had a meeting with the bakers' association, and discussed the matter. As a result, by the time we were ready to get out the order much of the work was already in hand and the whole job was accomplished without a court case. If this sort of co-operation did not exist, it would not be possible with the small staff at our disposal to carry on the routine inspection of the thousands of grocery stores, drug stores, bottling works, restaurants, candy factories and so forth. It would be absurd to claim that we are 100 percent good or anywhere near it, but we do feel that the attitude of the majority of the food handlers is such that we can put additional emphasis on those who are persistent and almost hopeless offenders. When anyone can start a grocery store or a restaurant, and almost anyone does, it is hard to keep track of these, and it is here that the majority of our failures occur.

Another phase of the work in which we have perhaps shown some originality is in connection with the drug inspection and notably with the proprietary medicines. All efforts by the old methods met with failure and it was clear that something new was needed. On the basis that while the municipality cannot tell the milkman what he must do in milk production, or tell the country slaughter house what must be the condition of the

cattle, neither can the city tell the medicine man how he must make his medicine or what must or must not be in it. But equally on the same basis the city can tell the milk man or the meat man what must or must not be in it *if it is to be sold in the city*. The meat and milk question has been carried to the supreme courts of several states and has won, so it was easy to persuade the City Law Department to give the new scheme a trial. We selected certain types, including baby medicines with opiates, poisonous dyes and lotions, and put in also the preparation of a million-dollar corporation from New York to show that there was no favoritism, and to get a test case with someone who would fight. We listed these to the drug stores and forbade their sale after a reasonable period of a few days. The air was at once filled with loud howls, but not from the druggists who really make but little profit on the proprietary medicines and prefer to offer something of their own. The loudest howl came from the million-dollar corporation, which sent its best legal talent to order us to withdraw the order and apologize. No revision of the order forthcoming, we were visited by the talent of the National Proprietary Association. In the interval of apparent peace which followed this, we got the druggists together and explained the situation. We showed its relation to their financial interest and warned them that the Proprietary Association would be on the job and try to get them to pull the chestnuts out of the fire. This was exactly what did occur, but too late, and the coolness of the reception led ultimately to an abandonment of the attempt. For two years none of the corporation's bottles were sold over Cleveland counters and only recently after a marked change of labels and of the literature in the package have they been allowed to come back.

With the valuable assistance of the Advertising and Better Business Clubs, a constant pressure has been put on the

newspapers. This, as every one knows, is the hardest and yet the most important part of the campaign. If a drug is not advertised, it is dead, and every effort will be made to keep the advertisement going. The way had already been opened by the removal of the cancer and venereal advertisements largely as a result of the general country-wide and Federal propaganda, and good results have been obtained, which are in the main becoming better all the time. Practically all new advertising is submitted to us before insertion and if there is disapproval on our part the advertisement is not accepted. It is surprising how many are thus kept out, and though there is still not a perfectly clean sheet in the city, the improvement is marked. No specifics are advertised, and where in the time of epidemics there is a change in the form of an existent advertisement to indicate that it is a sure cure for pneumonia, poliomyelitis or the like, we have always been able to get it removed immediately on the request of the Commissioner of Health.

In other words, the results have been very encouraging, though the necessary change of public opinion which must occur before the newspapers become our sincere friends will take years of unremitting effort. The plan is not a panacea and we would be breaking our own rules if we advertised it as such, but even in serious cases of the disease it will give relief if persisted in. We have on file all details of more than 3,000 proprietary medicines, some now historical, too many still in the field. Where the stuff is sold in Cleveland we have our own analyses as well as all recorded ones, and repeat

the former from time to time. The most promising thing is that we have gained the confidence of the druggists so that the Northern Ohio Druggists' Association which comprises over 90% of the possible membership, helps us in every way. The university connection is here strengthened by the close association of the Dean of the Pharmacy School with the practical druggists, so that there are two sources of information and coöperation.

Progress is not uniform. We slip at times, but on the whole we advance, and not a few of the steps come through the suggestions of the druggists themselves.

One might continue indefinitely with instances of one sort and another, but mere iteration is of no value. The experience of the years has shown that whether it be *post hoc* or *propter hoc*, the combination of association of the university in an official manner with the city and the establishment of the belief among the food handlers that the city is trying to help and not to hinder, result in an ease of administration that has been a life saver to us with our small budget and consequently small staff. It is also most true that none of the work could have been accomplished without the service of the three successive City Chemists, White, Knopf and Knapp, whose devotion to the work and development of the theses with which we started have been the moving feature of the affair, and through whom the instruction of the subordinates, giving these a share in the interest and avoiding the deadening which results from over specialization, has been possible.



The Report of the Sub-Committee on Rural Sanitation (Sanitary Engineering Section), together with portions of the discussion, presented at the Annual Meeting in San Francisco, are scheduled for the June issue of the Journal.

HOOKWORM IN CALIFORNIA GOLD MINES

RALPH W. NAUSS, M. D., DR. P. H.*

Read before Section on Industrial Hygiene, American Public Health Association, at San Francisco, Cal., September 17, 1920.

HISTORICAL—EUROPE

As far back as 1847¹ it was believed that "Egyptian Chlorosis" was due to ankylostoma found in the small intestine at autopsy. Subsequent to that time, there have been many reports of the finding of ankylostoma in anemic individuals and their presence has been believed to have some relation to the causation of the anemia. However, it was not until after work was begun on the St. Gothard Tunnel² that the significance of this parasite in the etiology of both endemic and epidemic anemias was generally appreciated. Several years before the appearance of a very severe and fatal anemia among workmen engaged in this tunnel in 1880, Prof Grassi³ made known his discovery of diagnosis of hookworm infection by microscopic examination of the feces. This made possible a thorough clinical study of the St. Gothard epidemic. Since that time hookworm anemia has been found to be a serious menace, not only in the tropics and subtropics generally but also in mines situated in various countries of the temperate zone.

Perroncito,⁴ to whom the principal credit is due for establishing the true etiology of the anemia among workmen engaged in the St. Gothard Tunnel, also showed hookworm infection to be prevalent among men employed in various mines of Hungary, Sardinia and South Central France. About this time hookworm infection was likewise found to be quite common among brickworkers in Germany. The origin of soil infestation in and around brickfields⁵ was traced to immigrants (Walloons) who worked in the mines of Belgium during the winter months and migrated to Ger-

many to labor in the brickfields during the spring, summer and early fall. In 1896⁶ it was discovered that hookworm-infected workmen from certain Austrian mines were carrying the infestation into German mines. Whether or not this was the occasion of the first appearance of the infestation in German mines is not definitely known. It seems, however, very probable that hookworm disease has existed among miners in Hungary, France, Belgium and possibly Germany, for several centuries at least, the belief being that former epidemics of anemia among miners in these countries were caused by hookworm infection.

In Germany,⁷ after the discovery above mentioned, steps were taken to control the anemia developing among miners by the provision of sanitary conveniences and the treatment of the sick, incapacitated and anemic. The disease, however, continued to spread, and as a consequence, a complete hygienic program was adopted in 1903, including the discovery and cure of all infected miners whether sick, anemic, incapacitated or merely carriers. This, though expensive and time-consuming, has proven to be the best policy. In Austria, where incomplete measures only were attempted, anemia is said to have continued to exist among 20 to 90% of the workmen. In Belgium the results achieved have been in ratio to the thoroughness of the control campaigns. Circumstances and conditions in French and English mines seem to have been more favorable for the control of mine infestation, and as a result the application of more or less incomplete measures have given gratifying results in control of ankylostomiasis among miners.

CALIFORNIA

The specific cause of the anemia,

*The author was engaged as Asst. Epidemiologist by the California State Board of Health when the material for this paper was collected.

known for years to have been exceedingly prevalent among miners employed along the "Mother Lode," California, was first recognized in 1906 by Dr. F. F. Sprague of Jackson, who had previously seen service in the Philippine Islands. It was he also who first treated this condition successfully at Jackson and endeavored to convince his colleagues of its specific nature and curability. Dr. E. E. Endicott,⁸ health officer at the time of Amador County, Calif., and attending surgeon for men employed in two of the largest gold mines situated near Jackson, the county seat, followed the lead of Dr. Sprague in the correct diagnosis of these anemias and achieved most gratifying results in the proper treatment of the same.

In 1909, Dr. Herbert Gunn,⁹ representing the California State Board of Health, made an investigation to determine the extent of infection among "Mother Lode" miners. In certain groups of miners, he found a high percentage showing an abnormal Eosionophilia, the cause of which was revealed by confirmatory stool examinations. His conclusions were as follows:

- (1) Hookworm disease is endemic in certain mines of California.

- (2) From 50% to 80% of those working in these mines are infected.

- (3) The infection undoubtedly is present in practically all the gold mines of California and in those of Nevada, just over the border.

No further attempts at investigation or control of ankylostomiasis among California miners were made until 1916, when the California State Board of Health in coöperation with the Federal Bureau of Mines and the Industrial Accident Commission of California agreed upon the following program:

1. To encourage the superintendents of the various mines to coöperate in the campaign.

2. To examine fecal specimens from the miners and determine the percentage of infected miners.

3. To reach an agreement with super-

intendents, that all infected men must be treated.

4. To make re-examination of all treated men.

5. To issue "Hookworm Certificates."

6. To re-examine eventually all California miners.

The results of work conducted along these lines by Cumming and White, representing respectively the California State Board of Health and the Federal Bureau of Mines, were published in 1917 by the U. S. Bureau of Mines (Dept. of the Interior) in Bulletin 139, entitled "Control of Hookworm Infection at the Deep Gold Mines of the Mother Lode, California." This report is most interesting statistically, but not very convincing regarding endemicity and the actual control of the infection among workmen.

In October, 1916 (the work of Cumming and White having been conducted during the Spring and early Summer of this year), the work of investigation and attempts at control of hookworm disease among miners were continued by the California State Board of Health under the direction of Dr. Cumming. However, owing to labor conditions, it seemed impractical immediately to resume activities along the "Mother Lode." It was, therefore, decided first to make a survey of the Grass Valley Gold Mining District, which is similarly situated in the Western foothills of the Sierra Nevada, some 60 or 70 miles northwest of Amador County, in which the deepest "Mother Lode" mines occur. This survey was completed during the latter part of November, 1916, and resulted in the finding of but two infected miners out of a total of some 1,400 workmen examined (one of these men was known to have formerly worked in "Mother Lode" mines).

In December, 1916, the labor situation had improved sufficiently to justify the resumption of our work among "Mother Lode" miners. The remainder of this paper is concerned with a discussion of factors influencing endemicity of hookworm disease in mines and the results of

related observations and experiments made by me during the winter and spring of 1916-17. Statistics as to the incidence of infection among men engaged in the various "Mother Lode" mines surveyed in 1916 and 1917 are shown on the tables here displayed. The significant reductions in percentages that appear so striking in some instances are not due primarily to the effects of treatment but rather to the marked turnovers in labor resulting from the general strike which occurred in the fall of 1916. A re-examination of some 40 men found to be infected before the strike and treated one or more times showed a much less reduction in percentage of infection than is indicated for Mine "A," given at the head of the table.

FACTORS INFLUENCING ENDEMICITY OF
HOOKWORM INFECTION IN MINES

The time allowed for the reading of papers in section meetings is such that only a brief résumé of my origin¹ discussion on these points can be attempted. In this article, which has not yet been published, factors influencing endemicity which depends on infestation of mine soil and water with hookworm larvæ are considered under four headings as follows:

1. Temperature, relative humidity and ventilation.
2. Mine drainage and methods of collection and removal of mine water.
3. Chemical composition of mine water.

TABLE I

Detailed Results of Diagnostic Surveys for Hookworm—Cumming and White,¹⁰ 1916, and the Author, 1917

Underground Workers					Surface Workers				
Mine	Year	Number Examined	Number Found Infected	Per Cent Infected	Mine	Year	Number Examined	Number Found Infected	Per Cent Infected
A	1916	158	95	60	A	1916	37	3	8
	1917	303	35	11		1917	53	2	4
B	1916	292	47	16	B	1916	..	..	..
	1917	370	30	8		1917	94	2	2
C	1916	171	114	67	C	1916	28	1	4
	1917	101	28	28		1917	8	0	0
I	1916	..	..	..	I	1916	..	..	..
	1917	58	8	14		1917	..	..	..
D	1916	57	22	39	D	1916	13	3	23
	1917	52	44	46		1917	..	..	..
J	1916	..	..	..	J	1916	..	..	..
	1917	57	9	16		1917	14	0	0
E	1916	56	13	23	E	1916	..	..	..
	1917	46	1	2		1917	..	..	..
F	1916	29	6	21	F	1916	18	2	11
	1917	31	3	10		1917	12	0	0
G	1916	121	40	33	G	1916	27	4	15
	1917	114	8	7		1917	24	1	4
K	1916	..	..	..	K	1916	..	..	..
	1917	42	2	5		1917	17	1	6
H	1916	85	26	31	H	1916	14	1	7
	1917	76	11	14.5		1917	19	0	0
L	1916	..	..	..	L	1916	..	..	..
	1917	125	16	13		1917	15	1	6.5
M	1916	..	..	..	M	1916	..	..	..
	1917	32	0	0		1917	13	0	0
N	1916	..	..	..	N	1916	..	..	..
	1917	85	6	7		1917	27	0	0
O	1916	..	..	..	O	1916	..	..	..
	1917	103	5	5		1917	9	0	0
P	1916	..	..	..	P	1916	..	..	..
	1917	113	0	0		1917	60	0	0
Q	1916	..	..	..	Q	1916	..	..	..
	1917	28	0	0		1917	12	1	8
R	1916	..	..	..	R	1916	..	..	..
	1917	34	9	26.5		1917	..	..	..
Total,	1916	969	363	36.2	Total,	1916	137	14	11.3
		(Average per cent for 8 mines)					(Average per cent for 6 mines)		
Total,	1917	1770	195	11.9	Total,	1917	377	8	2.1
		(Average per cent for 18 mines)					(Average per cent for 14 mines)		

4. Mine sanitation with particular reference to feces and disposal.

Temperature, Relative Humidity and Ventilation.—Under natural conditions, the most suitable temperatures for growth and saprophytic development of hookworm embryos to the infective larval stage are between 65° and 85° F. (18° and 30° C.). Below this range of temperature growth and development are slow; above this range growth and development are rapid but the eggs, embryos and larvæ are very apt to die. In the laboratory under artificial conditions, good results can be achieved if temperatures from 25° to 30° C. are maintained. The average temperatures of only a few of the mines, included within the scope of my observations and studies of hookworm infection among California miners, fell below a temperature generally considered necessary for normal growth and development of hookworm embryos and larvæ. Similarly it may be said regarding both limits of temperature above mentioned that there was no mine in some parts of which conditions of both temperature and relative humidity were not favorable for the establishment of endemic foci, assuming all other necessary favorable conditions to have been present. As to relative humidity, it may further be said in general that the humidity in all these mines was uniformly high.

Without going into more detail under this heading it must suffice to state that effective ventilation tended, as would be expected, to reduce materially both the underground temperatures and relative humidities. However, good ventilation was the exception and not the rule in "Mother Lode" mines. Where ventilation was effective comparatively low degrees of infection among the men appeared to be the case.

Methods of Collection and Removal of Mine Water.—A study of mine drainage and methods of collection and removal of mine water proved to be most interesting and instructive. In addition to drainage along the floor levels of

mines, it is necessary also to consider leakage from one level to another through fills and connections such as shafts, winzes and raises. These are all very important factors in the possible dissemination of larvæ from infested localities. Whether the infective larvæ are caught up and transported by water as it is drained off from infested areas or whether the collected drain water is supplied more directly with larvæ hatched from ova-laden feces through the use of water collecting devices for toilet conveniences, seemed to make little difference in the ultimate dissemination of larvæ. Attempts to intercept hookworm larvæ while being carried by mine drain water proved unsuccessful. However, periodic observations on the dissemination of larvæ hatched from infested stools deposited along a mine drain gutter as shown in Illustration I indicate the important role which mine drain water may play in the distribution of infective larvæ.

Boycott and Haldane,¹¹ who investigated ankylostomiasis among Cornish miners in 1903-1904, mention the use of the pump-cisterns by the men for receiving their evacuations and think "their use for this purpose less open to objection, since the feces are pumped to the surface where they can probably do no harm." They state further that "running water is said to prevent, in any case, the development of ova." These statements are, however, contrary to my observations and experience. In mines where the sumps were so used, the highest degrees of infection were found to exist among the underground workmen. Likewise the clinical histories of cases pointed quite clearly to the infested sumps as the most probable sources of high degrees of infection among the workmen. Running water did not appear in any way to prevent the development of larvæ from the ova. Furthermore, as already intimated, in addition to not preventing development of the larvæ, running water undoubtedly serves

both to distribute and collect larvæ from points of origin. Evidence on this point will be presented a little later.

In case of one mine (mine B in Table II) situated in the very center of the endemic area, a comparatively low degree of infection was upon examination found to exist among the underground workmen engaged therein. Without a careful survey of past and present methods of feces disposal in conjunction with the particular method of collection and removal of the mine drain water, a satisfactory explanation of this apparent anomaly would have been difficult if not impossible. In brief, it was found that the men defecated into wooden tanks or exit-pipes leading from the same, which were completely emptied at least once a day. The use of special water hoisting skips in a vertical shaft favored the removal of the water containing ova-laden feces with a minimum amount of shaft contamination. With these exceptions the circumstances incident to the operation of and condi-

tions existing in this mine were quite similar to those found in neighboring mines where a high degree of hookworm infection existed among the underground workmen.

Chemical Composition of Mine Water.—The relation of the chemical composition of mine water to the prevalence of hookworm infection among the workmen presented another interesting problem in my investigations. In case of two neighboring gold mines and a nearby copper mine which was also included within the sphere of our activities, surprisingly low percentages of infection were found among workmen engaged therein. Average samples of drain water from the two gold mines in question showed about 1% chlorine and a representative sample secured at the copper mine showed 1.6% chlorine as sodium chloride and a correspondingly high percent of the sulphate radicle iron and copper. See Mines N and O in Table II. During the course of their investiga-

TABLE II.
REARRANGEMENT OF PERCENTAGES OF INFECTION GIVEN IN TABLE I
TOGETHER WITH OTHER DATA.

Orientation Along Lode	Mine	Percent Workmen Underground		Infected Surface		Average Temperature of Working Levels (Winter)	Depth of Working Levels (In feet)	Underground Toilet Facilities	Remarks
	L	....	13	....	6½	82° F.	1200-1800	Fair	
	H	31	14½	7	0	69° F.	1900-2000	Poor	
	K	....	5	....	6	69° F.	1600-2000	None	
								Conditions very bad.	
	G	33	7	15	4	78° F.	2000-2800	Poor	
	F	21	10	11	0	62° F.	400-850	None	
	E	23	2	....	....	71° F.	1400-1800	None. Men go to surface.	
	J	....	16	....	0	....	....	None	Old mine just being reopened.
	D	39	46	23	....	77° F.	2700-3200	Very bad. Sumps used	
	I	....	14	....	....	78° F.	....	None	Mine recently reopened
	C	67	28	4	0	75° F.	1800-2850	Poor. Sumps formerly used	Drain water from mine "D" removed through shaft of this mine.
	B	16	8	....	2	73° F.	2400-3450	Fair	
	A	60	11	8	4	85° F.	3900-4300	Fair. Sump said to have formerly been used.	
						DEEP RIVER GORGE			
	M	....	0	....	0	....	400-600	None	Mine water contains:
	N	....	8	....	0	73° F.	1900-2750	Poor	1% Na Cl.
	O	....	5	....	0	75-80° F.	1400-2700	None	Copper Mine 1.6% Chlorine high in S04, Fe. and Ai.
	P	....	0	....	0	73° F.	1100-2750	Poor	1% Na Cl.
	Q	....	0	....	8	Similar to P.	....	....	Mine reopened recently Water saline
						DEEP RIVER GORGE			
	R	....	26½	....	....	76° F.	1300-1900	Poor Sump used.	



North
—west

South
—East



tions in Cornish mines, Boycott and Haldane also found hookworm infection rare among the workmen engaged in one mine the workings of which extended beneath the sea and into which sea water percolated. Frequently specimens of drain water from this mine showed less than 1% of chlorine as sodium chloride. In discussing the action of disinfectants on hookworm larvæ, these investigators¹² point out the necessity of carefully distinguishing the stages of growth of the larvæ in question. Upon emergence from the egg, they are readily killed by comparatively weak germicides, but if given favorable conditions of temperature, moisture, abundant food supply and freedom from contact with deleterious substances until encapsulated in the second moult skins, then these so called "encysted larvæ" manifest greatly increased powers of resistance to adverse conditions and substances.

According to both Manouvriez¹³ and Calmette,¹⁴ mine water, containing as low as 2% sodium chloride appeared to have been effective in preventing the infestation of the soil in French mines. These authors differ, however, as to the practicability of artificially salting mines in order to prevent infestation of the soil. I am inclined to agree with Calmette regarding the impracticability of this procedure as an effective control measure on a large scale for the reasons: (1) That the rapid dilution of the sodium chloride by the mine drain water will not permit of the maintenance of a sufficient degree of concentration and (2) in view of the great total length of drifts and cross-cuts such practice would entail an expense out of all proportions to the object desired to attain. However, on a small scale, salting applied to limited localities will undoubtedly prove more or less effective. In order to secure more light if possible on the effects of the chemical environment on the hatching of hookworm ova and development of the larvæ resulting therefrom, experiments were devised, approximating in so far

as possible actual mine conditions. Accordingly, typical specimens of mine earth were collected which seemed to represent the variations in geological formation and mineral composition of ore and rock that it was thought might have a bearing on this problem. These earths, after being dried, were thoroughly sterilized by heat and employed in two sets of parallel culture experiments. In the one series suitable quantities of ova-laden feces and mine earths were intimately mixed and cultured in a moist condition at 28.5° C.; in the other series the feces mixed with bone black (Loos method) were superimposed upon wafers of mine earth, the whole thoroughly moistened and cultured in a similar manner. The results of these two series of parallel experiments seemed to justify two conclusions: 1. That chemical mine soil environment as indicated by the chemical constitution of mine drain water exerts a marked influence on hatching, growth and development of hookworm larvæ. 2. That where deleterious substances are present in no great quantity the attainment of maturity (second moult or so-called encysted stage) is insured only when this state is reached before contact with harmful substances. It is quite well known that hookworm ova and larvæ in the encysted stage are quite resistant to adverse conditions as to chemical composition of the surrounding medium. The experiment is, however, too limited in scope to form the basis of any sweeping deductions, but it does appear to indicate at least that when the formations are of such a nature as seriously to load the drain waters with acid radicles such as chlorine or sulphate in combination with sodium, iron, copper, etc., hookworm larvæ will with difficulty be able to reach maturity under natural conditions and the small percent which may arrive at the infective resistant stage will have less opportunity of surviving long.

Mine Sanitation with Particular Reference to Feces Disposal.—It is an

unfortunate fact that the great majority of responsible persons engaged in the mining industry, have failed until very recently to recognize the importance of underground sanitation. Only comparatively few companies can boast of having given this matter the attention which it deserves until faced by an increasing prevalence of anemias due to hookworm infection. Even on the surface, the supply of toilets has frequently been most inadequate and crude. Consequently, although miners were in many instances expected to return to the surface to defecate when necessary, the usual result was that the men for sake of convenience and to avoid discomfort, especially in cold weather, would almost invariably resort to abandoned or unfrequented parts of the workings.

Such conditions and practice were far from the exception in "Mother Lode" and adjacent mines previous to 1916. In some instances, somewhat prior and in most cases subsequent to this time, very important improvements in the disposal of feces had been introduced into many of these mines. However, there still remains much to be desired in the way of more careful attention to details and the enforcement of sanitary rules. There are nevertheless notable exceptions to this statement and the general tendency seems to be in the desired direction. The greatest difficulty, encountered on the part of mine superintendents and foremen desirous of doing all possible to minimize fecal contamination of mine soil, is the periodic collection and removal of accumulated excreta by transport to the surface. Most men are unwilling to do such service even when inducements such as extra pay or shortening of time on duty are offered.

In England,¹⁵ it was thought that simple prophylactic measures sufficed to eliminate ankylostomiasis as an "industrial inconvenience" among miners. The scare, it is said, accomplished the greatest good in bringing much needed improvements in mine sanitation and

thereby safeguarding the future. It is furthermore believed that the outbreak in Cornwall proved the general immunity of most mines in England since there had been free and frequent interchange of men between the infested mines and mines located elsewhere in England. It is also contended that "As far as the infested mine itself is concerned, it does not seem that the benefits which have been gained in Westphalia (Germany) are greater than those in Cornwall to a

PLATE I



Ova-infested stools scattered at intervals along a mine-drawn gutter.

degree at all commensurate with the enormous sums of money which have been spent on medical examination and treatment and the payment of wages to men under treatment." It is admitted, however, that the German system has the great advantage within a few years of largely reducing the number of men capable of carrying the infection to fresh places.

Circumstances and conditions regarding ankylostomiasis among California

miners are in many respects similar to those reported from England. The description of Cornish mines as given by Boycott and Haldane in writing of their investigations, would with slight alterations serve quite well as a general account of "Mother Lode" mines. Likewise, the limited prevalence of the disease and the ease of reduction of incidence by the application of sanitary measures afford striking parallels. Regarding the freedom of other groups of mines in California, we have not full information, but sufficient data have already been collected to justify the statement that the disease had probably only secured an endemic foothold in some of the deep "Mother Lode" mines. No evidence of endemicity elsewhere in the state, either in mines or on the surface, has been found. State officials who are familiar with mines throughout the state, report conditions more or less unfavorable except in "Mother Lode" mines. Likewise, the examination of selected groups of workmen in a number of instances lends further support to this statement.

RESULTS OF OBSERVATIONS AND EXPERIMENTS IN MINE "A"

1. Dissemination of Larvæ in Mine.

Notwithstanding the rigid discipline regarding the use of underground commodes in this mine, it was found that men occasionally resorted, for toilet purposes, to unfrequented parts of the mine when convenient and detection seemed unlikely. (Plate II is typical of such conditions.) In one particular cross-cut stools were on several occasions found deposited at intervals along one edge of the drain gutter (as depicted in Plate I already referred to). Upon microscopic examination, several of these were found to contain an abundance of hookworm ova. At regular intervals subsequently, samples were taken from these stools, from the surrounding earth and sediment deposited along the edges and bottom of the drain gutter both above and below the sites of excrement. The

nematode larvæ obtained therefrom were observed from time to time and compared with those derived by culture from the stools as originally found, i. e., before larvæ had been hatched from the ova.

The method employed for the separating of hookworm larvæ from mine earth, consisted in placing the earth to be examined upon a medium ribbed paper filter and leaching with warm water from time to time permitting slight drying during the intervals. This seemed to be a fairly satisfactory method of securing the desired segregation of hookworm larvæ. As to just how effective this method may be, I cannot state since no attempt was made to determine this point. However this may be, I had no difficulty in obtaining hookworm larvæ from mine earths by persistent leaching with warm water. Several common earth nematode larval forms also came through the filters quite readily but little difficulty was experienced in identifying the hookworm larvæ.

These observations showed that under the most favorable conditions which was the case in this cross-cut, the larvæ are hatched out from hookworm ova in a few days and soon leave the stool, being found in the moist parts of adjacent surroundings, particularly close to the edges of the drainage gutter and frequently in the fine sediment accumulated on the bottom of the same. In all instances such larvæ had apparently already reached the end of the second moult stage. They were sometimes quiescent and at other times they were quite active in their movements. Concentrated light and heat appear to stimulate active movement.

As time goes on, one may demonstrate the presence of hookworm larvæ at increasing distances down stream from the point of origin. Thus it can readily be understood how in a comparatively short time, thousands of hookworm larvæ originating from a single stool may be scattered along drain gutters and eventually reach the shaft where they may accumulate in the water catchment and storage devices or be scattered still fur-

ther following the water in its course to lower levels in the mine. It can also be easily appreciated that transport of such infested drain waters to the surface in open "skips" may soon result in serious infestation of the entire shaft where sufficient dampness exists, which is the rule. These being the possibilities of mine soil infestation, resulting from one limited focus of infestation in the mine, what must be the sum-total resulting from promiscuous defecation in a large mine with its many ramifications of drift, cross-cut, raise and stops? Such conditions previously existed in "Mother Lode" gold mines. Owing to circumstances and conditions highly favorable to the establishment and maintenance of endemic foci in some of these mines, hookworm infestation of the soil early became established. These facts enable us to account for the reputation which mention of the "Mother Lode" mining district seems in general to have carried among miners and also to understand why the rank and file of men employed therein were drawn more largely from classes of foreign mine workers who are not at all careful about their personal habits.

2. Infection of Puppy Dogs.—As an ultimate means of determining the presence, identity and infective nature of hookworm larvæ obtained from earth collected in infested mines, an attempt was made to infect very young puppy-dogs in the abandoned cross-cut in Mine "A" where the observations just described were made. These animals which were of the fox terrier breed, were upon several occasions adequately exposed to mine soil thought to be infested with hookworm larvæ.

Shortly after the arrival of the half dozen puppy-dogs secured for the conduct of this and several other experiments, distemper unfortunately manifested itself among them. The two fox terriers appearing to be in the best condition were selected for this crucial experiment. The one lived but 12 days after the last exposure in the mine, while

the other survived 29 days. At autopsy in case of the former, a small immature nematode worm was found in the upper half of the small intestine. This specimen showed clearly the two pairs of teeth characteristic of *A. duodenale*. The latter animal gave the following post-mortem findings.

PLATE II



Typical of abandoned cross cuts in some of the mines frequented by men for toilet purposes.

"Rigor mortis not yet set in. Slight sub-acute inflammation of stomach and duodenum. Both lungs consolidated. All other organs in apparently normal condition. In the middle one-third of the small intestine, there were found five hookworms (one male and four females), which are but one-half the usual size. However, microscopic examination shows mouth parts of all and the bursa in case of the one male to be well developed." (These five specimens have been identified by Dr. W. W. Cort, formerly Consulting Helminthologist to the California State Board of Health, and sub-

sequently by Dr. Allen J. Smith, Professor of Pathology in the Medical School of the University of Pennsylvania, as *Ankylostoma duodenale*. However, the females lack evidence of sexual maturity as shown by absence of identifiable mature ova in the uterus.)

Judging from the length of time elapsing between infection and death in case of the second animal (approximately four weeks), it seems most probable that infection was by mouth. It is generally accepted that 6 to 9 or 10 weeks is required for complete development when larvæ enter exclusively by way of the skin, while two or three weeks less time is required when they enter by way of the mouth. Furthermore, the stage of growth in case of the one specimen secured from the first experimental animal after 12 days can only be accounted for on the assumption that entrance of the original mature saprophytic larva was direct through the mouth of this animal.

The above experimental infection of puppies with *A. duodenale* proves conclusively that hookworm larvæ, capable of infecting selected young puppies and beyond a reasonable doubt underground workmen also, were present in this cross-cut. Moreover the similarity of general underground conditions and sanitation in other parts of this mine ("A") and contiguous mines justifies the further conclusion, based on analogy, that hookworm infection could be even more easily acquired by the underground workers (the natural habitat of the adult *A. duodenale*) as long as infected men continued unrestricted to commit nuisances in these mines or were permitted to defecate into the water catchment storage devices.

INFECTION AMONG SURFACE WORKERS

The existence of hookworm infection among brickmakers in Germany has already been referred to. Owing to the low temperatures existing during the winter months, reinfection of the brickfields was probably necessary at the beginning of each warm season. As a consequence of

this and other circumstances, connected with brickmaking, the earth infestation appears to have been a localized one, affecting principally those employed in the brickfields or others whose occupations necessitated tramping over the same areas as was the case with shepherds at times according to Leichtenstern.

At mines, infection among surface workers has been found to be relatively low both in Germany and along the "Mother Lode." European investigations state that not over 1% of infection has been found among surface mine employees at any time. During the period of my work, only one infection was discovered, the origin of which could not be traced to infested mines or known infested surface localities. As was the case in Germany, no instances of infection were found among the wives and children of miners in California.

The variable temperature, generally low humidity, abundant sunlight and comparative sparseness of shade throughout the gold mining districts in the Sierra Nevada foothills, are all factors operating against the establishment of endemic foci on the surface in the neighborhood of mines. There was not lacking, however, a supply of infective larvæ discharged with drain waters from infested mines during 1916 and 1917 and previous years. In some cases, such mine drain waters had been used for irrigating gardens, and it seemed that under such circumstances some infestments of the soil might reasonably have been expected. However, such practice was the exception and not the rule. If, on the other hand, such infested mine drain waters had been used extensively for irrigation, some infections would have most probably developed among others than miners during the growing season. As a matter of fact, mine drain waters were almost invariably discharged into the small streams, together with the stamp mill "tailings," which are heavily laden with pulverized rock. The latter accumulates along the banks of the streams in firm

deposits which are quickly dried by sun and wind, thus making very difficult the existence of hookworm larvæ carried down with this heavy sediment and firmly incorporated in the drying and hardening deposits of the same.

IDENTITY OF SPECIES

Owing to the lack of control over the patient during the course of treatment, it was found very difficult to secure specimens of the adult worms being passed. However, during the re-survey in 1917, an attempt was made to collect adult worms from selected men employed in some of the mines. When given the series of doses of medicine with directions as to when and how to take them, the patient was also supplied with a gauze net (medium mesh) about 14 inches square which was provided with a string of about the same length, attached to each corner. These strings were secured to opposite ends of two small sticks, each about ten inches long, which were intended to serve as handles with which to lift the net and contents from the bowl of the toilet and wash the bulk of the feces collected through the meshes with water by alternately elevating and lowering the handles over the bowl of the toilet. In case of one mine where there was a dispensary situated near the "collar" of the main shaft, the placing of the net in the bowl of the toilet and manipulating of the same with water afterwards was done by an attendant, the vermifuge having been administered by the mine physician. Where the treatment was taken by the individual at home, he was instructed how to use the net and told to wrap it (wet) securely in heavy paper after washing as directed and return it the following morning to a place designated at the mine.

In this way, during the winter and spring of 1917, 70 adult specimens were secured from 14 different miners. One of these men was a Castilian, who had left Spain only four months previously. He showed a very marked anemia and

his first stool after treatment contained considerably more specimens of *A. duodenale* than were separated. Only one specimen of *Necator americana* (female) was secured, and this came from a patient showing a number of male specimens of *A. duodenale*. This would seem to indicate quite clearly that the prevailing species was *A. duodenale* and that *N. americana* only occurred in an occasional case. Out of the 63 identifiable specimens, 39 were found to be males and 24 females, thus giving a decided predominance of males. The largest number of specimens secured from one individual was 20, which indicates the comparative low degree of infection existing among the men at this time. During the course, however, of the first diagnostic survey made by Cumming and White in 1916 and previously according to the testimony of local mine physicians and others, the infection must frequently have been much more severe, judging both by the accompanying anemias and number of adult worms, said to have been found in the stools passed after the administration of the vermifuge, which was thymol in practically all cases treated at those times.

RESULTS OF TREATMENT

The marked reduction in both the total percentages of men infected and the severity of individual infections already alluded to which occurred during the interval of six months elapsing between the diagnostic surveys of 1916 and 1917, may be attributed largely to changes in and instability of labor brought about by the general strike which occurred during the fall of 1916. Treatment of infected men could have had comparatively little influence as a factor in bringing about this reduction, since only a small percent of infected men submitted to treatment which could not be controlled owing to the lack of authority and dispensary facilities. The rapid turnover in the personnel resulting from the voluntary and involuntary exodus of old, highly infected employees, and the importation of new blood (largely free of infection)

does, however, in my opinion, constitute the most important factor, which will supply an adequate explanation of these quantitative differences in diagnostic results and apparent therapeutic success, otherwise most difficult to account for. The method of diagnosis, namely centrifugation as described by Cumming,¹⁶ was followed in all cases. This is by no means faultless as shown by frequent comparisons with the direct slide and the Loos cultural methods. However, the possible discrepancies are not serious when large numbers of examinations are being made as has been shown by contrasting the results of the 1916 and 1917 surveys with those of subsequent surveys made in both the "Grass Valley" and "Mother Lode" mining districts. In the latter diagnostic surveys the culture method was used but actual statistics are not available to the author.

Regarding treatment following the survey made by me in 1917, nothing of an encouraging nature can be said since it was conducted as before but with less apparent success. Later ankylostomiasis occurring among miners of California was made a compensable disease by the State Industrial Accident Commission and the management of the State Insurance Fund agreed to treat all discovered cases under supervision until cured of the infection.

SUMMARY AND CONCLUSIONS

1. Anemia formerly so common among "Mother Lode" miners in California has been shown to be due almost exclusively to hookworm infection.

2. The California State Board of Health, in coöperation with the Federal Bureau of Mines, undertook a systematic survey of "Mother Lode" miners in 1916, which resulted in demonstrating the seriousness of ankylostomiasis among underground workers in this locality.

3. The Bureau of Communicable Diseases of the California State Board of Health began in the winter of 1916-17 a more comprehensive survey and detailed investigation of hookworm infection

among miners and soil infestation in various mines of California with a view to the control and ultimate eradication of the same.

4. The above mentioned survey and investigation in 1916-17 was conducted by the author, his purpose in the latter being not only to throw more light on the extent, topography and "demic" character of the disease but also to show how infection may be disseminated through mines, how and where the disease is usually contracted and to establish the apparent fact of endemicity in some instances and its absence in others.

5. The results of the author's observations and investigation were as follows:

(a) Endemicity of hookworm infection in mines is dependent not only on favorable conditions of temperature, relative humidity, mine drainage and chemical character of mine drain water but also on the particular circumstances and conditions existing relative to mine pollution with ova-laden feces.

(b) The use of mine water catchment devices and storage tanks, reservoirs, etc., to receive the evacuations of men while underground, may be responsible for a high incidence of ankylostomiasis among workers.

6. Nematode larvæ, resembling hookworm larvæ morphologically, were isolated from mine soil in a certain cross-cut in mine "A," and it was proved subsequently by infection of puppy-dogs in this same locality that hookworm larvæ capable of development into adult *A. duodenale* were actually present in the mine soil.

7. Ankylostomiasis among California miners has centered largely in a few of the deepest gold mines situated along one section of the "Mother Lode" in Amador County.

8. Surface infection did not exist in the vicinity of "Mother Lode" mines since practically all cases of ankylostomiasis discovered among surface workers were traceable to contact in mines with infested mine soil or drain water.

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Score Cards in Three Colors.—The value of score cards for improving the conditions of food establishments is generally recognized; perhaps, in some cases, over-rated. To obtain full value from their use it is necessary for the general public to understand their purpose and to be able to see them easily. As few people would have the courage to go inside of a store or restaurant, look at a card and turn around and leave if the score were unfavorable, cards should be posted so that people can see them before entering.

In order to meet this condition the County Board of Health of Morgan County, Ala., passed, on request, a regulation requiring that

all score cards be posted in the show windows of places scored. The cards used are of three colors—white for good scores, blue for fair and red for poor. As a result of the passage of the regulation and the use of the colored cards, it is possible for people to see from across the street in what condition an establishment has been found by the inspector. A scramble on the part of proprietors to put their places in order and what appears to be a real effort to keep them in good condition has followed the introduction of this plan.

F. W. DERSHIMER,
Director of Rural Sanitation, Alabama State Board of Health.

EPIDEMIOLOGICAL RÔLE OF THE CASE OF CEREBRO-SPINAL MENINGITIS*

R. R. SIMMONS, M. D.,
*Pathologist, Iowa Methodist Hospital,
Des Moines, Iowa.*

That carriers are not the infecting agent in most cases of cerebro-spinal meningitis is suggested. It does not seem probable that meningococci are present in the naso-pharynx of premeningococcus cases in numbers large enough to be a menace. These findings rest on negative results of swabbings taken shortly before the onset of the disease.

THE epidemiological rôle played in a community or hospital by persons who subsequently develop epidemic meningitis is one of importance and one about which we have very little real information. When a case of meningitis develops, the physician is immediately confronted with the problem of quarantine and he must, rather empirically, determine the period of time necessary for the isolation of the case, and also of the contacts of the case. It has been the practice in some hospitals, at any rate, to remove the case from the ward and place both the patient and the contacts in isolation. The contacts are then routinely swabbed and such carriers as may be detected are segregated for treatment. This procedure cares for all positive cases as well as all positive carriers, but the problem still remains as to what course should be followed in regard to the non-carrier contacts.

The incubation time for the development of meningitis is not known so it is impossible to hold these contacts a definite number of days and then release them with any assurance that no further cases will develop. If, however, evidence should be obtained indicating that the case of meningitis that had developed in the ward had not contaminated the

others, the contacts might be observed for a few days for the possible development of additional cases, and then all negative contacts might be dismissed. Suggestive evidence has been obtained regarding this problem during a recent outbreak of meningitis, and it is this evidence that is here presented.

It is commonly supposed, that the infecting organism in the transmission of meningitis is conveyed from one person to a second by means of the secretions from the nose and mouth. The majority of other diseases transmitted in this manner are most infectious during their onset. By analogy we are led to suppose, then, that this disease is also most infectious during the prodromal stage. This, if true, would be of great moment in the subsequent handling of the contacts. Further, this danger if real, would be multiplied many times in the case of a patient admitted to the wards of a hospital with an acute infection of the upper respiratory tract, since in these cases the coughing is more constant and the secretions more abundant. The opportunity is rarely afforded for studying bacteriologically cases which subsequently develop meningitis. Evidence of a negative character obtained from such a study, while not entirely convincing, is at least highly suggestive. It is evi-

*Compiled from data obtained at U. S. A. Army Hospital No. 33, Portsmouth, England.

dence of this suggestive character that may be deduced from this series of cases.

An opportunity was recently afforded for the bacteriological study of a group of persons for the meningococcus by means of routine post-nasal swabbing. This study included 48 persons in one ward of a military hospital, who were suffering from a mild type of influenza. One case of epidemic meningitis developed, and the entire ward was placed in isolation while bacteriological cultures were made. Routine post-nasal culturing was done upon every person in this ward for the detection of carriers.

The technique employed was that suggested in the U. S. Army pamphlet, "Standard Technique of Meningococcus Carrier Detection" employing the Mathers swab. Sterile wooden tongue depressors were used in order to obtain a good exposure of the throat and to insure the least possible contamination from the saliva. The material obtained on the swab was immediately smeared upon one side of a fresh, warm, laked rabbit's blood agar plate. Later these plates were smeared from the point of inoculation with a sterile platinum wire. They were then incubated at 37°C. for 24 hours and all suspicious colonies picked to plain glucose agar slants. After incubation these growths were examined in stained films and all Gram negative diplococci agglutinated against polyvalent meningococcus serum (Rockefeller Institute) and at the same time against the four specific type sera (C. S. F. Central Laboratory, London). Agglutination readings were made after 24 hours incubation at 55°C. The technique employed is given in some detail to assure the reader that a standard method of examination was employed.

The swabbing of the 48 contacts was done on the day following the appearance of one case of meningitis. The results obtained from this examination are given in the following table.

Person in isolation	48
Persons examined	48
Cases of meningitis	1
Carriers detected	1
Persons later developing disease.....	9

It will be seen from this table that the actual number of persons acting as carriers at this time was small, in fact, no more than might be found in a similar group of persons taken at random. It would seem then, that the number of persons actually contaminated by this case at this time was negligible, since the carrier rate was not unusual. On the day of the culturing, one new case of meningitis developed and on the following day one additional case developed. On the second day after the swabbing, five additional cases developed. On the third day one more, while the last case to develop in this group appeared twelve days later.

Case No.	Date of Swabbing	Date of onset of disease	Interval in days	Result of Swabbing
1.	(Original case)	Oct. 4, 1918		
2.	Oct. 5, 1918.....	Oct. 5, 1918	0	Negative
3.	" " "	Oct. 6, 1918	1	"
4.	" " "	Oct. 7, 1918	2	"
5.	" " "	Oct. 7, 1918	2	"
6.	" " "	Oct. 7, 1918	2	"
7.	" " "	Oct. 7, 1918	2	"
8.	" " "	Oct. 7, 1918	2	"
9.	" " "	Oct. 8, 1918	3	"
10.	" " "	Oct. 17, 1918	12	"

It seems quite unlikely that the incubation period of the disease is short enough to suppose that these cases developed as a result of contamination from the initial case since only two and three days intervened. It is more likely that the entire group had been contaminated at about the same time from some other source, possibly the carrier which was detected. It may be unfair, however, to suppose that the one carrier found was the source of infection for the entire group. These patients while associated with the carrier had for some time previously also been associated equally intimately with many other persons who were not subjected to examination as they were not admitted to the hospital as patients.

Since the first case to develop after the examination occurred on the same day as the swabbing, the plates were examined with unusual care. Every colony that was at all characteristic was picked and inoculated on glucose agar slants. Stained films from these subcultures, after proper incubation, were carefully examined. All Gram negative diplococci

were emulsified and tested by agglutination. In spite of the additional care in the examination of these plates, no meningococci were found in any of the nine cases.

It would appear, therefore, that the nasopharynx does not harbor the organisms, at least in large numbers, during the period immediately preceding the onset of the disease. It is further suggested that carriers and not cases are the source of spread of the disease, by the fact that the organisms are found in immense numbers in the naso-pharynx of carriers and also by the fact that contacts of a sporadic case rarely develop the disease. Fildes and Baker had 485 proven carriers under observation for a considerable time and not a single case of the disease developed. Flack* reports only four cases of the disease in his group of 185 carriers.

Fildes and Baker† in 1917 reported 26 cases which they had examined by post-nasal swabbing at varying intervals prior to the onset of the disease. In none of the 26 cases did they obtain positive cultures. Their report comprises cases observed at periods varying from 2 to 75 days before the onset of the disease. The series contains only one case examined as close as the second day. In the series presented in this paper, five cases were examined two days before, one, one day before, and one on the same day the disease first appeared. Since only a few hours elapsed before this last patient complained of definite meningeal symptoms, this case can be interpreted as an examination made at the very onset of the disease. In the present series, eight cases were examined in the prodromal or early stages of the disease.

It seems quite probable that if meningococci were present even in small numbers in the naso-pharynx, prior to the

onset of the disease, they would have at least been found in a certain number of these cases. Therefore, it seems probable that the organisms are either not present in the naso-pharynx prior to the onset of the disease, or that they are present in extremely small numbers. Certainly if they are present in too small numbers to be found by careful post-nasal swabbing, they are not present in numbers sufficiently large to prove a source of danger to the contacts of the case. Further evidence of this is obtained from the fact that while most of the inmates of this ward had been in close association with these cases during the incubation stage of the disease, still the carrier rate was very low, only one carrier being found in the entire ward. While those in this ward had been closely associated with the persons who developed the disease they are only a small part of the original group. So it is impossible to arrive at the carrier rate present in the large group from which these 48 cases came. It is evident, though, that the carrier rate in this smaller group, which had been contacts of these cases during the few days preceding the onset of the disease, had not been altered. That is to say, the contamination of contacts of these cases had not occurred.

SUMMARY

These results seem to indicate:

1. That the meningococci are received into the naso-pharynx in very small numbers in these cases in which the disease develops.
2. That they must rapidly pass into the meninges or the circulation.
3. That carriers and not cases furnish the source of infection in most instances.
4. It seems unlikely that the meningococci are present in the naso-pharynx of premeningococcus cases in numbers sufficiently large to prove a menace to those associated with them, even when other infections of the upper respiratory tract are present.

*Flack, M., Bacteriological studies in the pathology and preventive control of cerebro-spinal fever among the forces during 1915-16, Brit. Med. Research Comm., Special report series, No. 3, p. 59.

†Fildes, P., & Baker, S. L., The relation of the case of cerebro-spinal fever to the positive contact, Lancet, London, 1917, II, No. 4912, p. 602.

ROCHESTER, N. Y., TONSIL-ADENOID CLINIC AND HOSPITAL

Rochester, N. Y., has developed an allied clinic and hospital for tonsil and adenoid operations that is worthy of notice.

Since the opening of the Eastman Dental Dispensary in 1917, Rochester has enjoyed the privilege of having its children's teeth cared for by experienced dentists. Not only has this work been done, but the city has enjoyed an equally rare and important privilege in having the children educated in the hygiene of the mouth and the proper and frequent use of the toothbrush.

Along with the work of dental hygiene in the Dental Dispensary there are two sections, a Nose and Throat Section and an Orthodontia Section; and these sections, under their director, are responsible for the organization, growth and development of the first Tonsil and Adenoid Clinic on a scale limited only by the capacity of the Dental Dispensary to perform the necessary operations. Out of this came the larger Allied Hospital Tonsil and Adenoid Clinic and the tonsil and adenoid clinics in all the hospitals.

When the Dental Dispensary got under way in the early years of its organization

it was found that large numbers of children had to have certain tooth straightening or orthodontic work done. As the cases of tooth-straightening increased in number, the Director of the Dental Dispensary, Dr. Burkhardt, and the nose and throat surgeon, Dr. Ingersoll, were asked by the Donor of the Dispensary the reason for the large number of children with crooked teeth, mouth, face, and nose deformities. The answer given by the staff to this question was that facial and dental deformities were frequently produced by nose and throat defects known as enlarged and infected tonsils and adenoids. Aside from the question of crooked teeth, still further inquiry showed that nearly 2,000 children had been listed in the schools for tonsil and adenoid operations, but hospital facilities were not then sufficient to care for such large number of operations, and the large number to be found when all Rochester children were examined.

The Donor, Director and Surgeon immediately turned their attention to providing the means whereby it might be demonstrated whether the parents of Rochester's



One would hardly believe that these children are in a hospital ward waiting for an operation. Such is the comfort of music and "movies."

children would seize the opportunity of having their children relieved of their obstructing and infected tonsils and adenoids if that opportunity were provided and presented to them.

In the summer of 1920 a summer tonsil and adenoid clinic was established in the Dental Infirmary by increasing its bed capacity to take care of 40 children a day on five operating days a week. This work was carried on for about seven weeks and 1,470 children were cared for without a mishap. A special report of this work has been published. So popular was the sum-

be done approximately 560 operations each week. The children operated on are school children and children of pre-school age.

The children are gathered through a tonsil and adenoid survey conducted by the physicians and nurses in the schools, and they are divided into groups according to the urgency of their needs. They are furnished with "consent" cards to be signed by the parents, appointments are made and the parents conduct them to the particular clinic to which they are assigned. In the first three weeks of the winter clinics more than 1,600 children have been operated on



Typical group of children at the Rochester Tonsil-Adenoid Clinic.

mer clinic that when it closed it had still listed for operations about 2,000 patients. With such evidence of the appreciation of the work by the citizens of Rochester it was proposed to continue the work during the winter and on a much larger scale.

Mayor Edgerton offered Convention Hall Annex, a commodious building well adapted for emergency hospital purposes. A committee was formed of the directors of the various hospitals, representatives of the public and parochial schools and of health. The Community Chest agreed to finance the undertaking. At the same time each of the four hospitals, the General, St. Mary's, Homeopathic and Hahnemann expanded their facilities so that all told there should

without any mishap. The technic of handling them is to have them report to the clinics at two in the afternoon of the day preceding the operation. They are checked, numbered, cleared, bathed, examined, put into clean night clothes, bed slippers and a blanket and put to bed to the delights of movies and record concerts. The children are kept over the second night and returned to their homes in taxies the following morning.

The work has spelled opportunity for Rochester's children. Every child, no matter what the circumstances of its parents, has been given an opportunity to have its teeth properly cared for, to have its tonsils and adenoids removed and so to defend the

chief portals of entry, the mouth and nose, against disease.

This piece of work has been on a large scale, unusually large even for these ambitious days, but aside from the good actually accomplished in the betterment of the health of the children there has been the awakening of the spirit of the community and its enlightenment will serve to make possible a continually improving health condition in the future.

The parents of Rochester have had an op-

and more thousands of children will go to the clinics for their health's sake, to the end that they may demonstrate that "life is not to live but to be well."



Leaving the Hospital.

portunity to do a great piece of work for their children. They have responded to the invitation and the opportunity by thousands,



Little patient absorbed in the movies.



See Note on the Front Cover about papers for the New York Meeting of the Association. Programs are already quite well in hand. May 25 is approximately the late date for offering papers.

EDITORIAL SECTION

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WHY NOT SAY, "A COMPLETE EXAMINATION"?

The outlook of medicine is broadening and the industrial conditions of the worker have become the object of much medical interest. The hygiene of industry is a popular topic. Industrial clinics are being organized. Those concerned with the hygiene of industry seem, however, to have lost sight of one important factor, namely the worker himself. Attention is paid to his respiratory apparatus, his blood, his heart, kidneys and other organs, but little attention is paid to the individual who contains these organs. Little attention is paid to the other factors which enter into his constitution, his instincts, his emotions, and the other complex mechanisms which make him what he is. Yet the instinctive equipment of the man is as much part of his constitution as his circulation; his satisfactions and dissatisfactions, his ambitions, his unrest and discontent are as much an expression of his nature as his muscular force or his pulse rate. Industrial hygiene rarely makes any reference to these more complex manifestations of life. Again and again in the literature dealing with the organization of industrial clinics we find emphasized the necessity of a "complete *physical* examination." Why not talk of "a complete examination"? What is the meaning of the introduction of the word *physical*? It means that an incomplete examination of the worker is to be made; an examination which leaves out of account all the factors which make up the personality, the constitutional traits, the ability to get on with his fellows, the balance between the self-assertive and the social trends of his nature, the ability to face facts squarely and straighten out situations as they arise, instead of indulging in empty day dreaming and cherishing grudges, the ability to keep on doggedly at a task, instead of flitting from job to job, the responsiveness to social demands such as those of honesty, truthfulness, decency and loyalty. All these reactions of the individual are manifestations of his living essence, more intimately concerned with his happiness and his social value than many cardiac

or gastro-intestinal conditions. Yet they are avoided and constantly ignored in the ordinary discussions on industrial hygiene. It is time, therefore, to emphasize strongly the necessity in industrial clinics of making a "complete examination" and not merely a "complete *physical* examination"; of examining the worker and not merely the worker's organs; of paying attention not only to complaints of pain or weakness, but to complaints of depression, uneasiness, morbid sensitiveness; of observing not only a change of complexion, but a change in the behavior and in the moods of the individual. To some this may appear abstract or they may not know how to begin. It certainly involves more than a routine physical examination and requires special training; the physician needs to know the principles of mental hygiene, needs to have some psychiatric experience. He cannot cover the necessary ground personally, but has to organize a skilled personnel accustomed to study human reactions and to analyze the situations, which involve stress and strain. Such a personnel means social workers accustomed to deal with psychiatric problems, that is, with patients whose sickness cannot be expressed in terms of one organ or tissue, but whose disorder is a failure of adaptation to the stress and strain of a definite situation, the treatment of which disorder may involve modification of the situation and a change of attitude towards personal problems. An industrial hygiene which takes cognizance of the whole worker may contribute greatly not only to output and efficiency, not only to the elimination of certain physical diseases, but to the happiness and stability and social value of the working personnel.

C. MACFIE CAMPBELL.

HAVE YOUR WATER SUPPLY INSPECTED AS WELL AS ANALYZED

State laboratories and others that undertake the analysis of waters are often careless in reporting upon the results of analyses. The reports are frequently sent out with such comments as the following:

"This analysis indicates the water to be safe for drinking purposes"; "this water is potable"; "this water complies with the standards of the Treasury Department for Interstate Carriers and, therefore, is safe for drinking purposes." The invariable popular deduction from such legends as these is that the water may be used with perfect safety. As a matter of fact, the analyst knows quite well that the results of analyses apply only to the individual specimens examined and that it is practically impossible to determine whether the water is safe unless the analysis is accompanied by an inspection of the source of the water. Some laboratories persist in making the reports similar to the above even when previous analyses have indicated the water to be of doubtful quality. Mr. H. A. Whittaker, in a paper presented before the Engineering Section of the American Public Health Association in 1915, showed in a most striking and conclusive manner the great importance of an inspection of the source of supply as an element in determining whether the water is suitable for drinking purposes.

Notwithstanding all that has been said at various times and in various ways about the limitations of water analysis and the fact that an analysis can be accepted as only one point of evidence regarding the quality of water, such misleading reports on the part of analysts still continue. To avoid giving a false sense of security, analysts should be very careful to state that the results of analysis apply only to the particular sample and that the continued purity of the supply can be insured only by its adequate protection against pollution from all sources. Analysis alone may give false security.

P. H.

A. P. H. A. HEADQUARTERS REMOVE TO NEW YORK CITY

On May 1, 1921, the office of the Secretary of the A. P. H. A. and the business headquarters will be removed to the Penn Terminal Building, 370 Seventh Avenue at 31st Street, New York City. Letters addressed to the Secretary or concerning membership or general business should thereafter be sent to the new address.

The Editorial offices of the JOURNAL and NEWS LETTER will remain in Boston at the present address for about three months to come. Letters or communications for them should be sent as now, to 169 Massachusetts Avenue, Boston 17, Mass.

Reasons for the removal given in this issue of the JOURNAL, page 463.

REQUEST FOR JANUARY (1921) JOURNALS

The demand for the JOURNAL for January, 1921, has been so great that the reserve stock in the possession of the Association is exhausted. In order to supply future demands the Association will be glad to have any members who do not bind or preserve their sets, return this number. Twenty-five cents will be paid for copies of this issue returned to the Editor, American Journal of Public Health, 169 Massachusetts Avenue, Boston 17, Mass.

CORRECTIONS

In the symposium on narcotic drug addiction, appearing in the January, 1921, issue of the JOURNAL, in an article signed by Dr. C. E. Terry, appeared a statement quoted from the Los Angeles *Examiner* to the effect that the Worth Street Clinic of the New York City Health Department had been closed by Commissioner Kramer. This statement has been declared by the New York City Health Department to be untrue. A letter to Commissioner Kramer brings the reply that the article in the Los Angeles *Examiner* was incorrect and that the Worth Street Clinic was not closed by him, but by the New York authorities themselves.

In the same symposium appeared a review by a member of the staff of the JOURNAL entitled "Some General Facts." In speaking of the paper by Pellini and Greenfield, the following statement was used: "The authors of this article have drawn conclusions that have been interpreted by them and by others to mean that narcotic drug addiction has no basis in physical fact, but is merely a habit of vicious indulgence."

One of the authors, Mr. Greenfield, writes that this statement does not strictly represent the conclusions of the authors, and in accordance with his request the following conclusion referred to is quoted:

"1. We consider that the definite conclusion to be drawn from our work which, so far as we know, is the only work of this nature directly testing the question of immunity acquired by the human morphin addict, is that no substance is formed in the blood serum of a human being who has acquired a high tolerance to morphin, which is capable of conferring any degree of immunity to the toxic action of morphin on an animal into which it is injected.

"2. Likewise we have been able to show that the blood of a tolerant animal does not contain any protective substance against morphin."

In the same article the JOURNAL quoted verbatim an extract of the Bulletin of the New York Medical Association for October, 1920, relating to the Cotillo Bill. Some of the statements of the *New York Medical Journal* are denied by Dr. Wendell C. Phillips of New York City, from whose letter we quote: "This bill was unanimously endorsed by the House of Delegates of our State Medical Society, and I am sending you a copy of it . . . from which you will see that

it does not, as stated in the article, 'deprive physicians of the right to treat cases of drug addiction at any stage of this disease except under institutional restraint,' but permits them to treat such cases freely by personal administration of narcotics, or by any form of treatment which does not involve placing narcotic drugs in the possession of the addicts.

"Dr. E. Elliott Harris, who was chairman of the special committee of the American Medical Association, was also delegated by the New York County Medical Society to represent it at the hearing on this bill. He took pains to make it perfectly clear that he appeared only in the latter capacity and as Speaker of the House of Delegates of the State Society, and not as chairman of the A. M. A. committee, so the statement that the special committee of the A. M. A. appeared in favor of the bill is not true."

EDITOR.

COPYRIGHT NOTE

The original of the excellent portrait of General Gorgas in the March issue of the JOURNAL is from the studio of Harris and Ewing of Washington, and is copyrighted. The page should have borne the legend, "Copyright, Harris and Ewing." The apologies of the JOURNAL are due to this enterprising Washington studio.



BOOKS AND REPORTS REVIEWED

Creative Chemistry. *Edwin G. Slossum, M. S., Ph. D., New York: The Century Company, 1920. Pp. 308; illus.*

In this book the author relates in a remarkably interesting style the romance of industrial chemistry. Such processes are taken up as "Feeding the Soil," "The Race for Rubber," "Fighting with Fumes," "Synthetic Perfumes," the manufacture of sugar, the wonders of the electric furnace, etc.

Dr. Frank Crane says of the book, "The book is tremendous. It is an epoch. It is knowledge made beautiful, facts transformed to fairies."

Anyone desiring to read concerning the report of industrial progresses in a popular interesting style will thoroughly enjoy this book.

A. W. H.



A Diabetic Manual, for the Use of Doctor and Patient. *Elliot P. Joslin, M. D., Harvard Medical School. Philadelphia: Lea and Febiger. Second edition. Price \$2.00. Pp. 191.*

Dr. Joslin's recent announcement (*Journal American Medical Association*, Jan. 8, 1921) concerning the prevention of diabetes

by preventing obesity, must have struck a warm note in the bosom of all interested in the reduction of that large group of diseases of adult life which includes diabetes. The physician must caution those of his patients whose girth is increasing that superfluous weight is a dangerous burden to carry into adult life. A clinician of note has aptly remarked that "obesity indicates a flabby will."

In the preparation of this book Dr. Joslin had a definite object—to make it serve as a text-book for the physician to use in the education of his patients. For it is in the education of the patient and with his co-operation that diabetes can be controlled. The book has been revised to keep pace with the advances recently made in the treatment of this disease. The subject is lucidly presented from the prophylactic, hygienic, dietetic and symptomatic standpoints. The dietetic treatment is described in sufficient detail to make it readily available to those who must treat these cases. Many dietetic suggestions, recipes, menus and diet tables are presented. A chapter is devoted to the laboratory tests which are

useful in diabetic treatment. Those who read this book will find that the dedicatory note, "To help make the home safe for the diabetic is the object of this book," has been practically fulfilled.

D. GREENBERG.



Insects and Human Welfare. Charles Thomas Brues, Assistant Professor of Economic Entomology, Bussey Institution, Harvard University. Cambridge: Harvard University Press, 1920. Pp. 104. Price, \$2.50.

It is at least ten years since Professor Brues essayed to fix the responsibility for infantile paralysis on *Stomoxys*, and in the intervening decade he has widened his field of investigations of relations of insects to disease.

The present volume is one of segregation of the salient facts of the relationships of insects to man brought up to date. Public health leads in the group of subjects, and here in successive short discussions are considered malaria, yellow fever, dengue, and Mediterranean fever, ascribed to the mosquito, while the fly is placed where it belongs as a potential health risk. Foreign flies are described and the manner in which they carry diseases. Ticks and fleas and lice are likewise outlined in their relationships to human health. The chapter contains the essentials to the good understanding of the present situation in the whole matter. A second section of the little book is devoted to out-of-door economic aspects of insect destructiveness, while a third chapter discusses household pests.

There is a good deal to interest the health officer in Professor Brues' book. He states conclusions from time to time that are helpful. He speaks of the attitude of the people towards the housefly as becoming more and more closely a realization of the injury it can do, and notes that public education is nearly at the point where concerted action may be taken against it. He calls attention to the absurdity of the old-fashioned notion that all created things are beneficial to man, and asserts that some insects are decidedly harmful. No two insects are to be dealt with in the same way, so that the task on the entomologist is an important one, in order that the world may not waste

its endeavors in the wrong kind of suppression. He predicts a future field of increasing usefulness in the medical side of entomology and forecasts the need of much research here. The old barriers that kept insects limited to comparatively small areas are broken down, and they can avail themselves further of the most modern means of travel. Diseases, therefore, may be extended in their range as the insects migrate.

The book has many excellent illustrations and brings together widely scattered information through diagrams on distribution, seasonal prevalence and the like, which is interesting and timely. R.



Report of the Improvement of the Water Supply of New York City. New York. Frank E. Hale. (Manuscript.)

Sanitary engineers and others interested in the subject of water purification in its relation to public health will find interesting material for study in a report which is made available through the courtesy of Dr. Frank E. Hale, of the New York City Department of Water, Gas, and Electricity, who has compiled this excellent material.

The report is in typewritten form and only a limited number of copies are available for loaning purposes. The material includes, among other things: (1) chronological table showing chemical and bacteriological analyses of water corresponding to changes in water supply; (2) comparative table with analyses for *B. coli* content and typhoid rate for the three leading boroughs; (3) table giving typhoid and diarrheal death rates for each borough and for the entire city, with additional data concerning the effect of the improved water supply upon the typhoid rate; (4) comparative charts, with accompanying brief description, showing typhoid and diarrheal rates for each borough and for Greater New York, and with *B. coli* content given for the three leading boroughs; (5) distribution maps, one indicating the present water service, and the other showing the sources of the municipal water supply of 1915.

The report contains an exhaustive list of all measures adopted to improve the supply during the past ten years. Especial attention has been paid to chlorination.

ASSOCIATION NEWS

REMOVAL OF A. P. H. A. OFFICE TO NEW YORK CITY

In conformity with the vote of its Executive Committee, the American Public Health Association is to move on May 1 to New York City, where its address will be Penn Terminal Building, 370 Seventh Avenue, at Thirty-first Street, New York City.

Members of the Association will be interested in the reasons underlying this change of base. A short time ago the news was circulated of the formation of the National Health Council, in which the A. P. H. A. was one of nine or ten associations to coöperate in health matters. As the result of the formation of the Council it has seemed well to bring the associations into actual contact so far as their official headquarters are concerned. For this reason eight national associations or committees, together with a liaison office of the U. S. Public Health Service and the office of the National Health Council itself, have engaged quarters on the 15th and the 16th floors of the Penn Terminal Building in New York. These agencies are the following:

Fifteenth Floor:

American Social Hygiene Association.
National Committee for Mental Hygiene.
National Organization for Public Health Nursing (with the American Nurses' Association and the League for Nursing Education).

National Tuberculosis Association.

Sixteenth Floor:

American Public Health Association.
Bureau of Social Hygiene.
Child Health Organization of America.
Social Hygiene office of the Women's Christian Temperance Union.
National Health Council (with the Common Service Committee), New York office.
United States Public Health Service (Liaison office).

In the same building is the Federal Board of Vocational Education, and other agencies considering adjoining space are the American Society for the Control of Cancer and the Committee for the Control of Drug Addiction.

A Common Service Committee has been established which is planning to offer certain optional mutual services such as telephone, stock room, shipping facilities, rest room and lunch service, multigraphing and addressing, etc., and a joint library service is under consideration, together with some method of pooling the stenographic and typewriting work.

The National Health Council, organized on December 10, 1920, is composed at the present time of ten member organizations which have representatives in its management. A national headquarters office has been established at 411 Eighteenth Street, N. E., Washington, D. C., and in addition there will be the coöperative office in New York. The officers are: Chairman, Dr. Livingston Farrand; Vice-Chairman, Dr. Lee K. Frankel; Secretary, Dr. C. St. Clair Drake; Acting Treasurer, Dr. William F. Snow, and Acting Executive Officer, Dr. Donald B. Armstrong.

As suggested in the Editorial Note on page 460, letters to the Secretary of the A. P. H. A. or communications with reference to membership or general business should be addressed to the new office,

AMERICAN PUBLIC HEALTH ASSOCIATION,
Penn Terminal Building,
730 Seventh Avenue at Thirty-first Street,
New York, N. Y.

Till further notice the Editorial Office will remain in Boston, and communications for the JOURNAL or NEWS LETTER should be sent to the present address,

AMERICAN JOURNAL OF PUBLIC HEALTH,
169 Massachusetts Avenue,
Boston 17, Mass.



**Are you planning to go to the Fifteenth Annual Meeting of the
A. P. H. A. in New York City, November 14-18, 1921?**

LIST OF NEW MEMBERS

Proposed for Election to the

A. P. H. A.

March 5 to March 31, 1921, inclusive.

Names of Sponsors are set in **Bold Face Type**.

Names of New Members are set in Light Face Type.

ALABAMA

S. W. Welch, M. D., Montgomery.
George C. Marlette, M. D., County Health Officer, Bay Minette.

CONNECTICUT

John Ritchie, Jr., Boston, Mass.
William Hall Coon, M. D., Dept. of Health, Bridgeport.

ILLINOIS

John Ritchie, Jr., Boston, Mass.
C. O. Schneider, M. D., Commissioner of Health, Winnetka.
H. L. Woolhiser, Village Manager, Winnetka.

INDIANA

John Ritchie, Jr., Boston, Mass.
C. L. Bartlett, M. D., Dir. of Lab. for Clinical Diagnosis, St. Joseph Hospital, Mishawaka.

KANSAS

C. R. Silverthorne, M. D., Topeka.
Mrs. Clare Sherman Smith, Bacteriologist, Topeka.

MAINE

G. H. Hutchins, M. D., Presque Isle.
Percy E. Gilbert, M. D., Health Officer, Ashland.

MASSACHUSETTS

John Ritchie, Jr., Boston, Mass.
Mr. Harold T. Martin, Chicopee Falls.
W. C. Woodward, M. D., Boston.
Omaha Dept. Police, Sanitation & Public Safety, Atten. Mr. J. F. Edwards. Omaha, Neb.

MICHIGAN

W. C. Hirn, Lansing.
City of Petoskey, Atten. of City Clerk, City Laboratory, Petoskey.

NEW YORK

John Ritchie, Jr., Boston, Mass.
Municipal Reference Library, Atten. Rebecca B. Rankin, Librarian, New York City.

PENNSYLVANIA

John Ritchie, Jr., Boston, Mass.
Robert A. Kelly, M. D., Dir. Dept. Lab. & Research Med., Geisinger Memorial Hosp., Danville.

RHODE ISLAND

John Ritchie, Jr., Boston, Mass.
Henry G. May, Ph. D., Chief, Div. Animal Breeding and Path., Agricul. Exper. Station, R. I. State College, Kingston.

UTAH

A. H. Murray, M. D., Salt Lake City.
Cleve E. Kindall, M. D., U. S. Bureau of Mines, Houghton, Mich.

VIRGINIA

W. F. Draper, M. D., Richmond.
Rev. Herbert H. Young, Pres., Health Board, Kenbridge.

Robert A. Martin, M. D., Petersburg.
Louis Brownlow, City Manager, Petersburg.

WASHINGTON

R. J. Cary, M. D., Elma.
Dr. Frederick Slyfield, Seattle.

WEST VIRGINIA

A. J. Pickering, M. D., Huntington.
D. E. Musgrave, M. D., Barboursville.



EMPLOYMENT BUREAU

HELP WANTED

Help-wanted announcements will be carried free in this column until further notice. Copy goes to the printer on the 5th of each month for publication on the 20th. Mail to Boston office as early as possible.

In answering keyed advertisements, please mail replies separately to editorial office in Boston, Mass. In replying give age, professional training, salary requirements, previous positions held and three or more references.

Wanted: Chief Bacteriologist for Public Health Laboratory in New England city of about 100,000 population. Must be capable of developing and carrying on the work of an up-to-date laboratory, including bacteriological diagnosis and milk and water examination. Salary \$2,000. One assistant. Address 440, R. E. B., care of this JOURNAL, Boston address.

Wanted: Man with dairy school training; knowledge of chemistry and bacteriology of milk; ability to observe and make reports and recommendations relative to conditions in bottling plants. Salary to right man \$2,400 to start. Address 437 D. D. W., care of this JOURNAL, Boston address.

POSITIONS WANTED

Position-wanted announcements will henceforth be carried in this column. The charge is \$2 per insertion. Copy should be received at this office by the 5th of the month.

Supervisor of school hygiene, in city health department, desires new location offering more comprehensive program. Six years in public health work, including government, state and municipal connections in Europe, South America, Southern and Middle Western states. Can produce intelligence, initiative, energy and diplomacy in organization and administration of public

health activities. Complete data promptly submitted to interested parties. Address 151 B. V. R., care of this JOURNAL, Boston address.

Wanted: Position as Instructor or Assistant in school with a first-class Public Health course, with privilege of completing graduate work in Public Health. Several years experience teaching in secondary school and college. Qualified in Bacteriology and Sanitary Chemistry. Address 150 T. S. L., care of this JOURNAL, Boston, address.

Wanted: Statistical position with city

or state health department, or private health or social organization. Five years' experience in statistical work, two years as head of a department. Competent to aid in installing new system. Address 152, H. E., care of this JOURNAL, Boston address.

Wanted: Position as public health officer or epidemiologist by a man who has had years of experience in the U. S. P. H. Service and in state and municipal health service. Holds the B. S., M. D. and D. P. H. degrees of Standard Universities. Address S. L. B., 153, care of this JOURNAL, Boston address.



CONVENTIONS, CONFERENCES, MEETINGS

April 27-30, Rice Hotel, Houston, Tex., American Society of Civil Engineers.

April 28, Boston, Mass., Massachusetts Association of Boards of Health.

May 2-5, Brooklyn, N. Y., New York State Medical Society.

May 2-7, Louisville, Ky., Institute for Health Officers and Public Health Nurses, and Kentucky Public Health Association.

May 3-5, Columbus, O., Ohio State Medical Association.

May 9-10, Indianapolis, Ind., Indiana State Health Association.

May 9-11, Coronado, Cal., California State Medical Society.

May 9-12, Lincoln, Neb., Nebraska State Medical Association.

May 9-12, Skirvin Hotel, Oklahoma City, Okla., Southwest Water Works Association.

May 10-11, Atlantic City, N. J., American Association of Physicians.

May 10-11, Pensacola, Fla., Florida Medical Association.

May 10-11, Laurel, Miss., Mississippi State Medical Association.

May 10-12, Concord, N. H., New England Division, American Nurses Association.

May 11-13, Des Moines, Ia., Iowa Medical Association.

May 16-17, Toronto, Ont., Can., Ontario Health Officers' Association.

May 17-19, Springfield, Ill., Illinois Medical Society.

May 17-19, St. Joseph, Mo., Missouri State Medical Association.

May 17-19, McAlester, Okla., Oklahoma State Medical Association.

May 18, Toronto, Ont., Can., Canadian Anti-Tuberculosis Association.

May 18-19, Hartford, Conn., Connecticut State Medical Society.

May 23-26, Congress Hotel, Chicago, Ill., American Society Mechanical Engineers.

May 25-26, Concord, N. H., New Hampshire Medical Society.

May 31-June 1, Boston, Mass., Massachusetts Medical Society.

June 2, Providence, R. I., Rhode Island Medical Society.

June 3-5, Boston, Mass., State and Provincial Health Authorities of North America.

June 6-7, Boston, Mass., Association of American Industrial Physicians and Surgeons.

June 6-7, Hotel Mizpah, Syracuse, N. Y., Central New York Public Health Association.

June 6-10, Boston, Mass., American Medical Association.

June 6-10, Boston, Mass., American Medical Editors' Association.

June 6-10, Hotel Hollenden, Cleveland, O., American Water Works Association.

June 14-17, Waldorf-Astoria Hotel, New York City, National Tuberculosis Association.

November 14-18, New York City, AMERICAN PUBLIC HEALTH ASSOCIATION.

PUBLIC HEALTH NOTES

Abstracts by D. GREENBERG, M. P. HORWOOD, JAMES A. TOBEY and HOMER N. CALVER.

Findings of the Framingham Tuberculosis Demonstration.—The Framingham Tuberculosis Demonstration has brought to light answers to a number of vital questions concerning the control of tuberculosis. (1) The examination of thousands of people in Framingham indicated that approximately 1% were suffering from tuberculosis in an active form. Another 1% were classified as having arrested tuberculosis. (2) *How many cases should be under care?* The ratio of known active cases to annual deaths was found to be 9 or 10 to 1. (3) *What medical machinery is most useful to find tuberculosis cases?* This was found to be (a) routine medical examinations, (b) routine medical work in schools and factories, (c) an expert consultation service. (4) *What percentage of cases should be found in an early stage?* Before the demonstration the Framingham physicians were reporting 45% of their cases in an early stage. Since the beginning of the demonstration, of all the cases that have come under observation and treatment, 83% have been found in an early or hopeful stage of the disease. (5) *How many institutional beds are necessary for the treatment of tuberculosis?* There should be available at least one bed for every annual death. (6) *What constitutes a reasonably complete local community program for tuberculosis control?* Such a program would consist of adequate medical machinery for the detection and treatment of the disease, adequate nursing machinery (one nurse for every 2,000 of the population), adequate institutional provisions, an effective educational program, proper legislative provisions, including the prohibition of spitting, the control of incorrigible open cases. (7) *How many cases will escape early detection, even with adequate machinery?* The Framingham experience shows that at least 14% of the cases escape early detection. (8) *How many cases will die in spite of adequate treatment?* A minimum of 16% would remain as the irreducible standard for mortality. (9) *What is the cost of a reasonably complete tuberculosis program?* Framingham is now spending about \$2 per capita per year from public and private funds combined. This

amount of money will buy reasonably adequate pre-natal, infant and pre-school work; satisfactory school health work; industrial health work; special tuberculosis work along many lines and general community sanitation. (10) *What results may be expected?* For the entire demonstration period thus far a reduction of about one-third in the tuberculosis death rate has been obtained. For the year 1920 a reduction of about one-half under the pre-demonstration rate followed after four years of intensive work.—D. B. Armstrong, *Am. Rev. Tub.*, January, 1921, 847. (D. G.)

†

Entire Farm Areas Freed From Bovine Tuberculosis.—A noteworthy development in bovine tuberculosis eradication is the tendency to free from that disease areas containing many farms. The annual report of the Bureau of Animal Industry, United States Department of Agriculture, just issued, lists the following regions, which made tuberculin tests of all cattle within their boundaries during the last fiscal year: Clay County, Miss.; Island County, Wash.; Clatsop County, Ore., and the District of Columbia. Department officials believe that eradication of tuberculosis will proceed more rapidly, even than in the past, when it is taken up on the area basis.

Altogether 695,364 cattle were officially tested for tuberculosis during the last fiscal year. Of these 28,616 reacted and were removed from the herds. These figures are reported by the United States Department of Agriculture in a résumé of activities in coöperation with various states for the eradication of bovine tuberculosis.

The number of herds accredited as free from the disease was about three times as large at the end of the year as at the corresponding time a year ago. The records also show that in addition to the 3,370 accredited herds, 16,599 other herds passed the first official test, no reactors being found.—*News Letter*, U. S. Dept. of Agriculture, Jan. 5, 1921 (J. A. T.)

Special Treatment Clinics for Venereal Diseases.—The *Public Health Journal* (Toronto, Ont.), in its issue for March, 1920 (Vol. XI, No. 3) outlines the proposed special venereal clinics which it is the intention of the Provincial Board of Health to assist local boards in establishing. These present a well-digested plan, the details of which may be of value to health officers in this country who are undertaking to establish local clinics. The Provincial Board feels that the choice of a site for the special clinic or clinics should be left to a certain extent in the hands of the local authorities who understand local conditions. It would suggest, however, that where facilities already exist, as in the case of hospitals, etc., other things being equal, these facilities should be used. The Board will afford the following assistance to each clinic established:

1. For the purchase of furnishings and apparatus for a special clinic, \$1,000.

2. For each out patient treatment for gonorrhea.....\$0.50
For each out patient treatment for syphilis..... .50
(No more than one treatment each day will be paid for.) For each out patient treatment for syphilis in addition, free "salvarsan" will be provided—as soon as the Board is in a position to furnish its own product.

3. In the case of patients treated in the hospitals the sum of \$0.25 in addition to the foregoing grants will be paid to the hospital for each day of indoor treatment up to three months, at the end of which time the indoor grant will cease.

4. The sum of \$500 towards the maintenance of a social worker.

5. Standard record forms for the use of these special clinics will be supplied by the Board.

In return for this assistance the Board will require that the clinic will be kept up to a certain standard as follows:

1. The special clinic shall be for the treatment of venereal diseases.
2. The apparatus and furnishings for the clinic shall conform to a certain standard (Schedule A).
3. The personnel of the clinic shall be:
 - a. One specialist in venereal diseases who shall be appointed by the hospital if the clinic is in connection

with a hospital and by the local board of health in other cases. This officer must also be satisfactory to the Provincial Board.

- b. Such medical assistants as may be necessary shall be appointed on the same basis.
 - c. One full-time social worker who shall be a graduate nurse.
 - d. One clerk, if the clinic is treating more than 40 cases per week.
 - e. One male orderly.
 - f. If possible, one undergraduate nurse to assist in the clinic.
4. All treatment in the clinic shall be free.
 5. At least one night and two day clinics shall be held per week. (This may be modified on agreement.)
 6. Separate hours shall be set for men and women in the clinic; also, if possible, separate hours for the treatment of gonorrhea and syphilis.
 7. Weekly reports will be required on forms supplied by the Board.
 8. The clinic, including its records, apparatus, method of treatment, etc., shall be open to inspection by the Board.
 9. The municipality will be expected to advance an amount for the upkeep of the clinic or clinics which shall be approximately equal to the amount advanced by the Board.
 10. The social service nurse shall follow up cases outside the clinic to see that all patients continue treatment and also that any possible contacts are examined.
 11. Accounts should be rendered at the end of the month and will be paid on the Board's certificate.
 12. The Board reserves the right to modify these rules if such should, in the interest of the clinic, be deemed necessary.—(A. N. T.)



Evolution of Preventive Medicine.—In a lecture delivered at the School of Hygiene and Public Health, Johns Hopkins University, Dr. C. V. Chapin outlined the progressive stages we have passed through in the development of the public health movement in such clear and interesting manner that all public health workers should read it in the original. In regard to the health education of the public he sounds a warning

note. We are apt to follow too closely on the heels of the commercial advertiser. The professional advertiser often forgets that there is such a thing as truth, and the teacher of public health also sometimes forgets it. He aims to be effective first, last and all the time. It is how he says it and not what he says that worries him. Much health instruction is hopelessly behind the times, or else errs as much the other way by teaching as fact the most fanciful theories. There is too much teaching of error. The greatest danger of the educational movement in public health is that it will be wrecked on the shoals of error. He quotes a common admonition of Osler, when at the bedside with his patients, which was: "Have the courage to do nothing." Dr. Chapin paraphrases this admonition by saying to the writers of press articles and to the compilers of health almanacs: "When facts are not at hand, have the courage to say nothing."—C. V. Chapin, *Jour. A. M. A.*, Jan. 22, 1921, 215 (D. G.)



Progress in Tuberculosis Eradication Work in 1920.—At the end of the last calendar year there were in the United States more than 5,000 accredited herds free from tuberculosis. On June 30, 1920, there were 3,370 such herds and six months later, on December 30, there were 5,013, according to figures just compiled by the Bureau of Animal Industry, United States Department of Agriculture. During the six months' period there has been a marked increase in the number of herds that have successfully passed one test. On June 30, there were 16,599 such herds, and on December 30, 27,482. The department issued a report each month showing by states the number of herds that have been tested, the number of cattle that have reacted, and the number that have been found to be free from the disease.

Minnesota, with 731 accredited herds, leads all other states, with Wisconsin second with 496 herds, and Pennsylvania third with 425. During December, 1,447 herds in which there were 13,979 cattle, were tested in Mississippi. In Wisconsin 851 herds, having in all 15,411 animals were tested.—(J. A. T.)

Endemic encephalitis.—Following a careful review of the literature dealing with the epidemiology of encephalitis lethargica, the author reports on 153 cases occurring in the United States during 1918 and 1919. One hundred and five of these were in persons 20 years of age or over. The relation of the disease to influenza was studied. Since about 30 per cent of the entire population had been infected with influenza during the pandemic, significance could attach to the occurrence of a previous history of influenza in cases of encephalitis only if this percentage was markedly exceeded. In the series studied 46 per cent gave such a history. In the case of males this percentage rose to 71, while in females it dropped to 29. This difference is striking since the incidence of influenza during the pandemic was approximately 30 per cent for each of the sexes. The mortality from encephalitis lethargica was almost three times as great in cases with a sudden onset as among those in which the onset was gradual. Ptosis was observed in 95 per cent of the cases, diplopia in 83 per cent, blurred vision in 72 per cent. Asthenia was present in 93 per cent of the cases and an acute debilitation out of all proportion to the temperature and relative severity of the other symptoms was one of the striking characteristics of the cases. Fever was the most constant of all symptoms. Examination of the spinal fluid was of value in excluding other conditions. No specific data were discovered on which a diagnosis of encephalitis lethargica can be made definitely, though many of the fluids showed positive evidence of a reaction of the meninges due to an inflammation of the brain tissue. Such evidence consisted in an increase in cells, or in protein substances, or both. In over half of the cases the white blood count was under 10,000. Blood culture done in four cases was negative. Animal inoculations, in monkeys, were negative, but the inoculated material was not fresh. Approximately 900 persons were exposed in the immediate families of the cases reported, and no secondary cases could be discovered. Case fatality rate was 29 per cent for all cases, and 60 per cent for cases with a sudden onset.—*Report of studies conducted in the U. S. by Dr. H. F. Smith, U. S. P. H. S. Public Health Reports*, Feb. 11, 1921.

Prevention of Diabetes.—Dr. Joslin, one of the leading authorities on diabetes in this country, in an analysis of 1,000 cases finds that this disease is largely a penalty of obesity, and the greater the obesity the more likely is Nature to enforce it. The sooner this is realized by physicians and the laity, the sooner will the advancing frequency of diabetes be checked. He minimizes the existence of a fat diathesis. Granted there is one person in a thousand who has some inherent peculiarity of the metabolism which has led to obesity, there are 999 for whom being fat implies too much food or too little exercise or both combined. At present the most common decades of onset of the disease are the fifth and sixth, in which the outstanding peculiarity, according to his analysis, is that there are more cases markedly overweight than in the other decades. Prevention of diabetes implies a knowledge of the predisposing agency. Overweight is a predisposition to diabetes. The individual who carries overweight is at least twice, and at some ages 40 times, as liable to the disease. For the prevention of more than half of the cases of diabetes in this country, no radical undernutrition is necessary; the individual is simply asked to maintain the weight of his average fellow man. It is well known that diabetic patients come too late for treatment. If the disease is detected early it is far more susceptible to diet. Its early recognition lies in frequent urinary examinations.—E. P. Joslin, *Jour. A. M. A.*, Jan. 8, 1921, 79. (D. G.)



Scabies in School Children.—In order to shorten the time required in the treatment of scabies in school children a "bathing scheme" was started and proved extremely useful, reducing the average time of exclusion from school from 56 days in the non-bathed case to 12 days in the bathed cases. Dr. E. Fretson Skinner, dermatologist to the Sheffield education committee, describes the scheme as follows:

"Only severe cases are chosen—as obviously with the present establishment one cannot so treat every 'scabies' patient. The children who are selected for bath treatment are given instructions to come to the bath house at a fixed time, bringing with them a complete change of clothes.

"Arrived at the bath house, the child is

stripped in a dressing room and the clothes it has been wearing as well as the second set are taken to the sterilizing chamber. They are there sterilized by superheated steam and dried—an operation taking an hour, during which the child is treated.

"Fifteen minutes are spent rubbing soft soap into the skin (mother, if intelligent, can help in this), and then for the next twenty minutes the child sits in a slipper bath of hot water, and with a 'loofah' and a nail brush the hands and other parts are scrubbed to open the scabies burrows. After the bath the skin is dried and the next fifteen minutes are employed in well rubbing in sulphur ointment. By this time the clothes are ready and the child is dressed in a sterile set, taking home another set.

"The cost of this scheme is practically the same as the cost of treatment by the old method, so that when the shortened period of exclusion is taken into consideration the bath method is really much cheaper.

"The bath method does not of course prevent reinfection, but the number of 'return cases' in the two groups—bathed and non-bathed—are significant. Whereas in the cases treated and cured at home 5.46% become reinfected, amongst the bathed cases the figure is only 1.03%.—*Medical Officer*, Feb. 5, 1921, 65. (D. G.)



The Public Health Movement in the Light of Modern Psychology.—It has been the common experience of most public health workers that efforts to promote the public health simply to diminish disease and prolong life do not always succeed. Community action for health work must be stimulated by other motives. It is necessary to appeal to the instincts that activate men, in order to make the public health movement successful. Among the instincts that are particularly important agents of activity are those of self-sacrifice, praise, power, loyalty, participation, service, beauty and worship. In order to make further progress in public health work, it will be necessary to stimulate the imagination of the people, and to fill them with motives other than those which favor healthy living merely because it is desirable.—Donald B. Armstrong, M. D., and Eunice B. Armstrong, M. A., *Modern Medicine*, Dec., 1920, (M. P. H.).

STATE HEALTH NOTES— LEGISLATION

National. Congressional Procedure.—Up to the present time the *Journal* has presented sketches of Congressional action on health matters prepared for it by its own correspondent, Mr. James A. Tobey. With the establishment of the National Health Council this undertaking has been assumed by it in the interests of the affiliated associations. The following notes are prepared from those assembled by Mr. John F. Hayes for the Council.

At the close of the last Congress on March 4, 1921, there had been introduced 29 bills related more or less closely to public health. These fall into about nine categories.

A. READJUSTMENT OR REORGANIZATION OR NEW GOVERNMENT MACHINERY

1. Smoot-Reavis law for the survey of departments of the Government with possible reorganization of medical and health activities. This was passed December 17, 1920. It is known as Public Resolution No. 54, Sixty-sixth Congress. The committee on reorganization has been selected and consists of Senators Reed Smoot of Utah, James W. Wadsworth of New York and Pat Harrison of Mississippi, with Representatives C. F. Reavis of Nebraska, H. T. Temple of Pennsylvania and R. W. Moore of Virginia. The committee is to get to work at once to determine in what ways the executive departments of the Government overlap one another. The report is to suggest redistribution of the activities. There should be great opportunity for improved health activities in the Government if the reforms are properly presented to this committee.

Since there are some 34 different bureaus and departments of the Federal Government engaged in medical and public health work, it is probable that this committee will have important recommendations to make to Congress. An unofficial survey indicates that these independent activities are in nowise correlated. The principal ones are here noted: In the Treasury Department are the U. S. Public Health Service and the War Risk Insurance Bureau; in the Department of Labor, the Children's Bureau. In the Department of the Interior are the Division of School Hygiene

and Physical Education of the Bureau of Education, the Indian Medical Service and the Government Hospital for the Insane. The Department of Agriculture has Bureaus of Chemistry, Animal Industry, Entomology and Biology, all of which are engaged to some extent in health work. In the Department of Commerce the Bureau of the Census conducts the Division of Vital Statistics. The War Department and the Department of the Navy have each one its own medical service. Then there are independent commissions and boards such as the Interdepartmental Social Hygiene Board, the Federal Board for Vocational Training, the Bureau of Safety of the Interstate Commerce Commission and the medical service of the Government printing office, that are not related to any of the other health agencies of the Government.

There is an opportunity such as has never before been presented to view and discuss the subject, and in the interest of coöperation and coördination health officers should express opinions tending to the betterment of the public service.

According to recent reports the committee is going ahead actively in the establishment of a headquarters, staff, etc. Senator Smoot, chairman, is arranging to send a questionnaire to all departments, and the information thus secured will be the basis for further action.

2. H. R. 14961. The Rogers Bill for the merger of the War Risk Insurance Bureau, the Board of Vocational Education and the United States Public Health Service is in "satisfactory progress in committee."

3. Senate 2507. Senator France's Bill "to establish an Executive Department to be known as Department of Public Health" was not reported to the Senate and thus failed of enactment. This bill provides for an elaborate system of public health activities under one department of the Government, with a member of the Cabinet at its head. This bill is worthy of the careful study and consideration of the several national health organizations.

4. Senate 1660. This bill, to provide a Division of Tuberculosis in the U. S. Public Health Service, was reported favorably by the Committee on Public Health, but did not pass the Senate.

5. Senate 4543. This bill to establish a

Department of Social Welfare was not approved by the committee.

6. The Interdepartmental Social Hygiene Board. Congress refused appropriations for most of the items requested by this board. The question of limiting the appropriation to \$300,000, to be expended by the U. S. Public Health Service, was before the Joint Committee at adjournment.

7. H. R. 7. Senate 1017. This is the Smith-Towner Bill, providing for a Department of Education with its head a member of the Cabinet. It would give authority "to conduct investigations and studies in the field of education, public school education, physical education, including health education and the supply of competent teachers for the public schools." It would carry an annual expenditure of \$100,000,000. Widespread opposition has developed and there is no likelihood of an early passage of the measure.

B. THE TREATMENT OF EX-SERVICE MEN

8. H. R. 15422, in part. This is a portion of the Sundry Civil Service Bill, which was passed as a separate measure. It is an elaborate provision appropriating \$18,000,000 for enlargements and new constructions in hospitals for disabled ex-service men. There are indications that five new hospitals will be constructed in the country, each to cost \$2,500,000, the construction work to be under the Secretary of the Treasury. It is the greatest undertaking of the kind ever made by the Federal Government. It is a matter of great interest to national health organizations. The details may be changed somewhat by the Conference Committee, but there seems to be no doubt about the general program for this expenditure being carried out.

The Sundry Civil Service Bill contains provisions for repairs and additional equipment at seven existing hospitals, appropriates \$100,000 for improvements at St. Elizabeth Hospital, Washington, D. C., and provides for coöperation between medical officers of the Public Health Service with the Bureau of Mines in the health, safety and sanitation of mines at the expense of the latter. It was not passed.

9. Senate 4357. Senator France's Bill for the provision of Medical Service for Discharged Soldiers and Sailors was reported favorably to the Committee on Public Health, but did not pass the Senate.

C. TUBERCULOSIS

10. Senate 2207. This bill permitting the treatment in Government hospitals of Government tuberculous civilian employees passed the Senate, but failed to receive favorable action in the House.

11. Senate 284. This bill provides for the care of indigent tuberculous persons who are not legal residents of the state in which they are temporarily located, part of expense to be borne by state and part by Federal Government. No action was taken on the bill.

D. MATERNITY, INFANCY AND CHILDHOOD

12. Senate 3259. The Sheppard-Towner Bill for the protection of maternity and infancy has passed the Senate and was favorably reported in the House, but did not pass. The bill provides for an elaborate program, some of the details of which were given under Legislation in the *Journal* for January, 1921, page 84.

E. PHYSICAL AND HEALTH EDUCATION

13. Senate 3950. The Fess-Capper Bill provides for the promotion of physical education in the United States through coöperation with the states in the preparation and payment of supervisors and teachers of physical education, medical examination and school dentistry. Legislation of this character was favorably referred to in the Republican platform, which endorsed the principle of Federal aid for vocational and agricultural training, and further approved of a thorough system of physical education for children, including adequate health supervision and instruction, seeking to remedy the conditions revealed by the draft examinations. The opposition to the bill has come chiefly from the anti-medical groups, including osteopaths, optometrists, Christian Scientists and others.

14. Senate 1536. Senator Sheppard's Bill to establish and promote civic and health extension education failed to receive favorable action in the Senate Committee.

F. NARCOTICS

15. H. R. 16118. This bill, introduced by Representative Rainey, seeks to amend the second of the Harrison Acts of 1914 for the control of opium and narcotics. This act regulates international traffic in the drugs and the amendment will tighten the restrictions on the exportation of certain narcotic drugs to certain foreign countries, particu-

larly China and Japan. There seems to be good prospects for the passage of the bill at the special session. The first Harrison Act, which forbids the importation or manufacture of smoking opium, and the third, which regulates domestic traffic and is generally known to the medical profession as the Harrison Law, are not affected.

16. Senate 2785. Senator France's Bill providing "aid from the United States to the several states in the prevention and control of drug addiction," was reported favorably from the Committee on Public Health, but did not pass the Senate.

G. VENEREAL DISEASES

17. H. R. 12955. The Steenerson Bill forbidding the mailing of printed matter containing false advertisements on the cure of social diseases was favorably reported in the House but did not pass either branch.

H. PUBLIC HEALTH SERVICE

18. Senate Joint Resolution 141, to "permit the Public Health Service to coöperate with the states in the control of malaria," received no favorable action in the Senate.

19. H. R. 3478. The Deficiency Law approved July 11, 1919, contains provision appropriating \$1,500,000 for the purchase of land and buildings and erection of hospitals by the Public Health Service.

20. H. R. 12046. The Deficiency Law approved March 6, 1920, authorizes officers of the Public Health Service to be credited with service in the Army, Navy and Marine Corps in computing longevity pay.

21. H. R. 7343. The Sundry Civil Act approved July 10, 1919, contains a provision permitting persons suffering from infectious diseases to be admitted to Marine Hospitals, not to exceed ten cases which are allowed to each hospital.

22. H. R. 7293, July 14, 1919; H. R. 7700, July 21, 1919, and 7778, July 24, 1919. These bills for the purpose of authorizing influenza research by the Public Health Service were introduced during the outbreak of the disease. None of them was acted on favorably. The annual appropriation bills have carried a provision making \$500,000 available for threatened epidemics. This money is at the disposal of the U. S. P. H. S.

23. H. R. 10510. Congressman Mann's Bill provides that the United States shall coöperate with the states in promoting the

health of the rural population. No action has been taken on the bill.

I. MISCELLANEOUS

24. Senate 3959. Senator Kellogg's Bill is to incorporate the National Board of Medical Examiners of the United States. No action was taken on it.

25. H. R. 15482. This bill amending "the charter of the American Red Cross so that the Executive Committee shall consist of nine instead of seven persons," was reported favorably to the House, passed, and sent to the President.

26. H. R. 12046. The General Deficiency Law approved March 6, 1920, contains a provision authorizing the Secretary of the Treasury to make regulations as to disposal of articles produced by patients in hospitals.

27. H. R. 5728. Congressman Watkins' Bill would require the separate tabulation of mortality statistics to show the comparative rating of the white and colored races, and mortality for cities by residents only. No action was taken on the bill.

28. H. R. 15638. Congressman Langley of Pikeville, Ky., is the author of this bill to provide for a hospital for the treatment of trachoma in Pikeville, Ky. No action was taken on the bill.

29. H. R. Document 1017. At the close of the session Surgeon General Cumming of the Public Health Service made a request of Congress for an appropriation of approximately \$1,290,000 for the improvement of the quarantine stations at Boston, New York, Philadelphia and Baltimore, to take care of the typhus situation. No action was taken at this session of Congress.



A further item of national health importance has been the appointment and confirmation of Dr. C. E. Sawyer, the President's private physician in Marion, O., as Brigadier General in the Medical Reserve Corps. It is understood that he is to make a general study of the various Federal welfare activities. He has already begun to communicate with public health officials in Washington and in other cities regarding public health, education, child welfare, social justice and kindred subjects. He is to report his findings to the President, and his appointment may affect the program of the Smoot-Reavis committee.

California.—Senate Bill 406, introduced by Senator Crowley seeks to amend the State Medical Practice Act by providing that no person who does not hold an unrevoked physician and surgeon's certificate shall maintain or operate any clinical, diagnostic, pathological, biological or other laboratory in the state for the investigation, diagnosis or treatment of human beings for diseases or the prevention thereof, or for any injuries, deformities or any other physical or mental condition of human beings, or for the preparation, manufacture, standardization, sale or other disposal of any serum, vaccines, antitoxins or other biological products.



Indiana.—The State Legislature, which adjourned March 7, created a new division in the State Board of Health, the Division of Housing. An appropriation of \$15,000 was voted. It is obligatory to employ a director and the work of the Bureau starts as soon as the law is in effect, which will be on the issuing of a proclamation by the governor and the distribution of copies of the law.



Iowa.—The Model Vital Statistics Law was passed by the Iowa House of Representatives on March 25 and went immediately to the Senate, where approval is expected.

The Iowa Legislature has passed a bill which has been signed by the governor, providing for the licensing of chiropractors in the state.



Massachusetts.—The joint committee in the Massachusetts Legislature voted "leave to withdraw" on the Maternity Bill recommended by the Special Commission appointed by Governor Coolidge to investigate the general subject. The earlier story of discussion of the subject and the presentation of bills is given in the *Journal* for April, 1920, and progress was reported in the *Journal* for May, 1920. The report of the Committee is really a valuable document, presenting as it does a concise story of the benefits of maternity legislation in other countries and the results of investigations in Massachusetts. Accompanying the report was the text of a Bill suggested by the Commission. This was in effect that the State Department of Public Health is authorized

to provide advice, instruction and visiting nurse care to women during pregnancy and confinement, and to mothers and their infants after childbirth, regardless of their financial condition. In cases of women requiring financial aid at such times, provision is made for furnishing it, "and no woman shall be deemed to be a pauper by reason of having received such aid." To receive the benefits of the Act the mother must have been a resident of the state for at least six months. The Department of Public Health is authorized to make regulations, employ nurses and these under certain conditions are exempted from civil service rules. Maintenance of the work is to be cared for by annual appropriations by the Legislature.

There were two bills before the Committee, that of the Commission and the Spencer Bill. The latter was unanimously rejected but there was a strong minority dissenting from the leave to withdraw on the Commission Bill, numbering 1 Senator and 5 Representatives.

The Compulsory Vaccination Bill applying to private schools was given leave to withdraw. A bill was favorably reported providing that registered dentists must be citizens of the country.



New Mexico.—The following Acts have been passed by the Fifth Legislature, which adjourned March 12:

Senate Bill 163, creating a Department of Public Welfare, and merging the State Department of Health and the Child Welfare Board as bureaus of this department.

House Bill 80, amending Chapter 85, Laws of 1919 (Public Health Act) enlarging the powers of the Bureau of Public Health, abolishing municipal health officers, and making the county the local health unit under a county health officer; providing for sub-registrars, and methods of paying for the collection of Vital Statistics.

House Bill 85, amending Chapter 2, Laws of Special Session, 1920, to provide for a single, county-wide health levy of one-half mill in place of former levies in counties and municipalities.

S. J. R. No. 21. Proposing a constitutional amendment limiting tax levies. Before passage, this was amended to exempt the one-half mill health levies from other tax limitations. This assures a special

health levy as a permanent policy for the State.

Senate Bill 47. A stringent anti-prostitution act.

House Bill 137. A red light abatement and injunction act.



New York.—The officers and advisory committee of the New York City Conference of Mayors and other City Officials, acting for the cities of the state, have presented to the Governor and State Legislature of New York a statement about general municipal legislation and some of the more important city problems which are likely to be referred to the State Legislature of 1921. Of the group of suggestions made by this committee, one, that of reorganizing health work, will be of interest to health officers generally. The recommendation is that a general law be passed authorizing first and second-class cities to abolish bureaus of health and to establish departments of health under the jurisdiction of an appointed commissioner. He is to have the same powers that are now conferred by general law upon boards of health and health officers, with the exception that the power of appeal shall be vested in the official or body appointing the commissioner. Third-class cities are authorized to abolish boards of health and to confer upon the health officers of such cities such powers as are now vested by general law in boards of health, except that the power of appeal shall be vested in the appointing body or official.



South Dakota.—The South Dakota Legislature, now adjourned, passed House Bill No. 68, creating a board of chiropractic examiners and providing for the examination and licensing of chiropractors, with certain amendments to its original form, and also Senate Bill No. 294, which creates a Division of Child Hygiene in the State Board of Health and provides for the acceptance of any funds available from the Sheppard-Towner Bill in Congress. House Bill 202 was also passed, providing for the segregation and maintenance of feeble-minded persons in the state and appropriating money to care for them. This Bill creates a Commission for the Control of the Feeble-Minded to consist of the Superintendent of the State School for the Feeble-

Minded, one physician, one psychologist, one sociologist and one attorney, appointed by the Governor. The purposes of this Act are to keep all such persons wards of the State and to prevent their reproducing their kind. The Commission is to make a survey of state institutions for feeble-minded persons, and citizens are required to report such individuals in their own families or coming within their observation, and teachers must report them if in their classes in school. The sum of \$8,000 is appropriated for carrying out the purposes of the Act.

The General Appropriations Bill carried \$46,700 for the use of the State Board of Health, being more than double the sum named in the appropriation of 1919.

Senate Bill No. 32, with reference to the examination of all persons wishing to practice medicine or any branch of the healing art, some of the details of which are given in the *Journal* for April, page 386, was passed by the Senate but lost in the House. House Bill 126, providing for a certificate of health and fitness from applicants for marriage was lost, and also Senate Bill No. 173, the Model Vital Statistics Bill.



Texas.—The 37th Legislature passed five bills with reference to public health. Not one of them carried an appropriation although all were constructive measures. The Consolidation Act, which merges the Pure Food and Drug Department with the State Board of Health, placing the whole under the direction of the State Health Officer, is expected to save the people in the neighborhood of \$15,000 a year. Another Act is in the interests of the prevention of communicable diseases, and prohibits persons infected with or affected by a contagious disease from working in restaurants, hotels, bakeries, meat markets, cafés, dairies or dining cars. The Act also provides for the proper sterilization of all dishes, receptacles or utensils used in eating or drinking in public places. A similar Act prohibits the employment of persons suffering from a contagious disease in barber shops or beauty parlors and has rigid requirements concerning sanitation. Another Act requires all maternity homes and hospitals to be registered with the State Board of Health, while the fifth requires a prophylactic solution to be dropped into the eyes of newborn babies.

STATE HEALTH NOTES—GENERAL

National.—The United States Bureau of Mines and the New York and New Jersey Bridge and Tunnel Commissions have entered into coöperative investigations in connection with the ventilation of the proposed Hudson River vehicular tunnel. The question is as to the best method of supplying fresh air and removing the poisonous products of combustion given out by motor vehicles. The Bureau of Mines has already made road tests with a hundred automobiles and trucks at its experiment station at Pittsburgh, Pa., with reference to the amount and composition of exhaust gases from motor vehicles. At the same time a set of tests has been made on a large number of students in the physiological laboratory at Yale University with reference to the dilution requirements of such gases with fresh air so as to render them absolutely harmless. Further investigations are under way at Urbana, Ill., with an experimental duct 300 feet long, similar to the ventilation duct in the tunnel, for the purpose of finding out the factors towards ventilation. This duct is fitted with special 300-horse power motors for the experiments, and the results will be of value for the information they will furnish in the flow of air through ducts of concrete. Still a fourth group of experiments is to be made at Bruceton, Pa., where a 400-foot tunnel will be constructed large enough for a single line of automobiles.

Among the experiments to be discussed here will be the diffusion of exhaust gases, temperature, conditions affected by the operation of gasoline motors, the physiological effects of temperature, exhaust gases, and smoke under operating conditions.

The U. S. Public Health Service has prepared a new motion picture film which presents the life history of the mosquito, especially the kind that transmits malaria germs. A fair share of the film is from actual life.

It has been definitely shown that pellagra varies inversely with the family income in the cotton mill villages of South Carolina. This is a result of a three years' investigation by the U. S. Public Health Service. The relationship has been suspected but it is now definitely measured. As the income falls the disease is found to affect more and more members of the same family, and as

it rises the disease decreases, and it is rarely found in families that enjoy the highest incomes, even although this highest might still be low. One curious fact was found in the variation of the disease in families with the same income, but this is said to be due to differences in expenditures for food, intelligence of the housekeeper, and the ownership of cows, gardens, etc. Some differences in villages were found although they seemed to be economically similar, and these are attributed to the availability and condition of food in the local markets.

Figures issued by the Bureau of Railway News and Statistics at Chicago, Ill., and published in the *National Safety News* announce that 38,000 lives were saved on American Railways in the year 1919 by safety work. In 1906 one passenger was killed for every 183,000,000 passengers carried one mile, while in 1919 this ratio diminished to one passenger for every 476,000,000 carried a mile.

A survey of deficient individuals in Oregon conducted by the U. S. Public Health Service brings to light the fact that 75,000 men, women and children out of a total population of 783,000 are dependents, delinquents, or feeble-minded, are unable to work, and are a constant strain on the finances, strength and morality of the state. More than 500 school children out of a total school population of 32,000 were found to be more or less mentally deficient. One of the objects of this work was to obtain for the people of Oregon some idea of the problem that confronts them and an estimate of the heavy annual loss both economical and industrial. These figures will enable the legislature to work intelligently towards a program that will stop much of the economical loss and restore health and establish useful lives where so many individuals are now "down and out."

The Children's Bureau, Washington, D. C., has made a study of the infant mortality of the city of Akron, O. In the year selected the rate in the city was 86 per thousand births. Compared with other cities in this country studied by the Bureau, this is low, but the note is made that even 86 is comparatively high when New Zealand is considered, for in Dunedin a minimum is reached at only 46. In Ohio the mortality of babies of native mothers was much less

than among babies of foreign-born mothers, especially in digestive and respiratory diseases, while those artificially fed infants had a mortality of about four times that of breast-fed babies.

✦

Alabama.—In a recent statement by the Board of Health of Jefferson County, Birmingham, Alabama, the possibility of a local outbreak of smallpox is discussed by Dr. J. D. Dowling, Health Officer. There seems to be a fairly general sprinkling of the disease with one or more cases in many different communities within his district. With reference to the attitude of the public in the matter Dr. Dowling outlines the situation quite well. He notes that the spread of smallpox depends entirely upon the presence in a community of susceptible or unvaccinated persons and its prevalence will usually vary directly in proportion to the number of such persons, regardless of such control measures as isolation and quarantine however rigid or efficiently applied.

Successful vaccination affords the only practical means of protection available at the present time against smallpox, and the burden therefore rests with the individual to seek such protection by applying to a physician of his own choice or to a representative of the Board of Health for vaccination.

After some outlining of the procedure in cases of smallpox, in which it is made clear that the so-called and dreaded "pest house" is a relic of older times and only under circumstances of inadequate facilities for isolation at home is the smallpox hospital utilized.

"In this enlightened age," writes Dr. Dowling further, "no child should be permitted to enter school without first exhibiting evidence of successful vaccination either in the shape of a scar or certificate from a physician. That such a view is in keeping with sound public policy is indicated by the fact that this principle has been enacted into the laws of our Commonwealth and our courts have conceded that such a law is reasonable and valid when there is imminent danger of smallpox becoming epidemic. Yet, in spite of this, we find in many grades in many schools more than half the pupils without evidence of vaccination.

"A particular appeal is made to physicians, school authorities and others to encourage vaccination wherever indicated."

✦

Delaware.—As the result of a two years' survey in Sussex County, Del., following a similar survey in New Castle County, both of which were made by the U. S. Public Health Service in collaboration with the Children's Bureau, the state officials engaged in the care of mental defectives have become interested in the establishment of a Bureau of Mental Hygiene in connection with State Board of Charities. For the first steps in carrying out a program the Legislature has appropriated \$60,000 for improving the care and treatment of mental patients at the State Hospital at Fahnhrust. A training school for nurses specializing in neuropsychiatric diseases is to be opened and occupational education and physiotherapy will be employed.

✦

Maine.—Ten deaths from *encephalitis lethargica* have been reported, this being but a portion of the whole, since the requirement of reporting it is not yet well known to all physicians.

Augusta, Me., claims to be probably the pioneer city in New England to introduce motion pictures of lower forms of life into the class room. The film employed is that of "Bacteria," and the pictures are of the series issued by the Society for Visual Education of Chicago, Ill.

The State Board of Health is calling the attention of the citizens of the state through the press to a number of practices that are contrary to the interests of public health. One of its actions is towards discouraging the practice of dry sweeping. Damp sawdust, wetted tea leaves or bits of moist paper will prevent that wholesale distribution of dust which dry sweeping ensures.

Registration of births is a matter on which the State Board places emphasis. Its importance in legal matters and the requirements of vital statistics are good supporting reasons.

Dr. L. D. Bristol, Health Commissioner of Maine, is calling the attention of his local authorities and those having in charge the sanitation of the lumber camps. He regards these camps as places to which the class of immigrants that bring typhus might be likely to go. If a person bearing

the infected lice should make his way to a camp, the disease would almost certainly break out among the lumbermen, and these, with their proverbial restlessness, moving from camp to camp might spread the infection once introduced. "The lumber camps of Northern Maine should be put into such condition," writes Dr. Bristol, "that epidemics of vermin-borne diseases cannot threaten them. Lumbering is one of Maine's greatest industries and should be placed on a healthful basis."



Michigan.—Michigan has added to its health educational outfit a motion picture on tuberculosis, which is available for exhibition in any town or city of the state or may be secured by any local grange. It tells the story of contraction of the disease by the daughter of the farmer whose herds were diseased, and leads to a finale of an "accredited herd" and the return of the daughter, cured, from a sanatorium.

State Health Commissioner Olin has undertaken to establish in the minds of the people the relationship between defective oral conditions and streptococcus infection. He emphasizes that fact that when typhoid fever is mentioned the mind turns at once to thoughts of contaminated milk or water. In the same way, he thinks, uncared for throats should be linked with the diseases in which the streptococcus is implicated.

"No diphtheria in Michigan by 1929," is the slogan of health workers in the state, in the interests of an antitoxin campaign. It is the intention of the State Board of Health to equip a laboratory for the manufacture of the prophylactic and distribute it free. It is estimated that the loss by this disease is about equivalent to \$1,000,000 a year.

The state is taking a hand in the spring clean-up this year. Letters have been circulated to all municipal administrators emphasizing the necessity for removing dangerous and unsightly nuisances which may in any way menace the health of the community. Through mass meetings and other gatherings it is proposed to excite public action.



Michigan is following the advice of Surgeon General Cumming of the U. S. Public Health service, in facing squarely the issue of venereal disease. It acknowledges the great number of patients treated, but claims

greatest activity in work of prevention and cure. Its lecturers have addressed not less than 1,500,000 in their audiences and have distributed half a million pamphlets, while half a million of the state's citizens have attended the health exhibits. A special effort of the State Health Department is now directed toward rural sanitation, in an effort to give the country child quite as fair a chance as his city brother.

The city of Flint is undertaking to improve its milk supply by educating the producers of the milk. A letter is addressed each month to "Mr. Milk Producer," giving timely hints and suggestions. No. 40, for March, 1921, calls attention to the coming of warmer weather, the care to be exercised in keeping the utensils clean and in properly washing and scalding the cans.



New Brunswick.—Following are the figures with reference to births, marriages and deaths for the Province during the year 1920. Although subject to minor changes, they are substantially correct.

Total number of births.....	10,494
Total number of marriages...	3,718
Total number of deaths.....	5,545

The population of the province at the last census (ten years ago) was 351,889 and may be estimated at the present time at about 380,000, exclusive of one county not in the registration area.

The service for the collection of birth, marriage and death returns has been placed under the Department of Health of the province and was initiated on the 1st day of January, 1920, replacing the former service for this purpose which proved to be ineffective and unsatisfactory. The present service, as may be noted by the above figures, promises to be a decided improvement upon the old and the foregoing figures are the first to be published for many years concerning the vital statistics of the province.



New York.—With reference to enlarged thyroid among the negroes, Dr. Overton makes note that out of 91 colored children in a school in his district no less than 18 give evidence of a well-marked enlarged gland, and the teacher, also colored, states that since coming to the school eight years ago she has been affected by the same difficulty. In the same district a school of white

children numbering 200 or more exhibits only one case of the kind.

Smallpox outbreaks have caused much demand for vaccination, and in Geneva some 3,500 persons have been inoculated. The last week in February gave a record of 19 cases of smallpox in the state with nine foci, 13 being urban cases with four foci and six cases being rural with five foci. In the city of New York there were 1,170 vaccinations in January, 1921, and 1,594 in February, against nearly 7,000 in December, 1920.

In the matter of diphtheria, at the request of the Health Commissioner of New York City the New York County Chapter of the Red Cross is undertaking to immunize 25,000 children in the kindergarten and primary grades. The technic includes determining with the Schick test which children are susceptible to the disease and injecting them with a neutral toxin. Consent of the parents is first required, and this has been accorded for half the requests. An emergency staff of four physicians, five nurses and five clerks is provided by the Chapter, and it is expected that four months will be required to immunize the entire number of school children. The younger children have been selected for the reason that the disease is more fatal here. The figures of last year show that 95 percent of the deaths from this disease were among the age groups of less than ten years.

In continuation of the guard against typhus the Health Department of the City of New York is watching the public schools for any immigrant children that enter them. These are followed to their homes by the inspectors to determine home conditions. The babies of pre-school age that are taken to the clinics are subject to similar procedure.



New York.—In an effort to determine the incidence of jaundice in a locality, the State Department of Health has secured from Dr. Hideo Noguchi the information that particular note be made of the presence or absence of these symptoms: eruption, nephritis, petechia, jaundice and temperature range.

In view of the possible incoming of typhus, the Department has preferred a special request to Congress for additional appropriations to equip more fully the Quar-

antine Station at New York and other ports of the country.

A conference of health officers of second-class cities in New York state was held February 15 at Albany, with short papers and addresses and an opportunity to exchange experiences. The next conference is to be held at Syracuse in November.

Lake Pleasant, in Hamilton County, N. Y., is at the present time without a resident physician and in consequence the town authorities have been authorized to guarantee to a competent physician locating there the sum of \$1,500 a year.

The great shortage of nurses that has been threatening the hospitals of New York City is being met in a unique way by women who in ordinary life belong to the leisure class. Two hundred volunteers have been organized by the New York County Chapter of the Red Cross and placed on duty in fifteen of the largest hospitals. By taking over such tasks as washing patients, wheeling them to and from the operating room, making beds, checking laundry and taking the histories of patients, they are releasing scores of nurses for more difficult duties. A large number of women who took Red Cross courses in home nursing during the war are acting as nurses' aides, doing practically everything the nurse does in the wards except give medicine.



North Carolina.—Dr. Millard Knowlton is undertaking a very vigorous campaign against venereal disease in the state, driving home his facts with letters and printed documents. The latter are in part reports of cases from *Case Records* published by the Massachusetts General Hospital and the literature of the American Social Hygiene Association, etc. The case reports serve to acquaint the physicians of the state with some unusual diagnoses, which may be helpful to them, while the publications of the Association are for the education of the people in general and are fitted for popular reading.



Ohio.—Ohio, like other states, is making a campaign against diphtheria and is emphasizing the toll taken by the children's diseases. The statistics are made pointed by this initial statement: "Imagine a plot of ground 100 yards wide and nearly 300

yards long—a six-acre lot. Suppose it had been set aside ten years ago to be used as a cemetery, to be used only for the bodies of Ohio children dying from diphtheria, whooping cough, measles and scarlet fever. It would be full today. . . . Under its sod would lie the remains of 17,120 Ohio children, none of them over ten years of age." In connection with this plain statement are given the means of avoiding disease through inoculation in the case of diphtheria and by protection in the case of the other maladies. It is true and it should be very generally known that if a baby can be kept out of the way of these children's diseases until five years old, the risk of death from them is reduced to a mere fraction of that at earlier ages.

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The *Ohio Public Health Journal* for December makes a special study of vaccination, with some very pertinent diagrams, and a number of important summaries from the reports of the British Royal Mission on Vaccination. One of these is a statement of two hundred years of smallpox in London:

TWO HUNDRED YEARS OF SMALLPOX IN LONDON

(Rates given are average annual mortality per 100,000 population for the periods mentioned.)

Years	Rate
1660-1679.....	417
1728-1756.....	426
1771-1780.....	502
(Vaccination introduced in 1798.)	
1801-1810.....	204
1831-1835.....	83
1841-1850.....	40
1851-1860.....	28
1861-1870.....	28
1871 (last great epidemic)	242

(Epidemic of 1871 followed by strengthening of English compulsory vaccination law.)

1872-1880.....	22
1881-1885.....	29
1886-1894.....	1

(In 1889 not one smallpox death was recorded.)

Note that the rate for the period immediately before the introduction of vaccination was 500 times as great as that for the most recent period listed.

Texas.—In his proclamation designating the week of March 13 to be Health Week throughout the state, Governor Pat M. Neff of Texas rehearsed the place of public health in modern life in these terms:

WHEREAS, the greatest instrument of liberty that has ever been written enunciated the truth that every man is born with certain inalienable rights, among which are life, liberty and the pursuit of happiness, and

WHEREAS, without perfect health man can neither enjoy his life, liberty, nor be happy, and

WHEREAS, every true American subscribes to and believes in the truths set forth by Thomas Jefferson in the Declaration of Independence, and

WHEREAS, physical and mental efficiency contributes in every way to the well being of the people and constitutes the most valuable asset of any state, and

WHEREAS, every child has the right to be well born, in order to enjoy its inalienable rights, and

WHEREAS, medical science has demonstrated beyond question that diseased minds contribute to delinquency and crime, and

WHEREAS, preventable diseases are responsible for more than 75% of all cases of sickness, and of deaths in this state, and

WHEREAS, filth, ignorance, negligence and indifference are the prime factors in the dissemination of diseases, and

WHEREAS, statistics are available to show that:

(1) Social diseases are responsible for a large percentage of the blindness of the new born, of female diseases, surgical operations and insanity; and

(2) That the development of county health departments are essential in the rural districts of Texas; and

(3) That vital statistics furnish the only accurate index of health conditions in any community; and

(4) Poor housing, bad ventilation, dust and filth are contributors to ill health; and

(5) Mosquitoes and flies are the carriers of dangerous disease producing organisms; and

(6) Rats are present in this state in alarming numbers, creating an enormous economic loss and constituting a constant health menace as disease disseminators; and

(7) Unprotected food and drinks and un-

sterilized utensils used in dispensing of same are both unwholesome and dangerous agencies in the dissemination of diseases by contact; and

(8) Wholesome water supplies and sanitary sewer systems are a public necessity; and

(9) Approved sewage disposal is essential in protecting the oyster growing, truck and live stock industry and the prevention of contamination of water courses.

Then follows the formal setting aside of the various days of the week for definite health duties. †

Virginia.—As a part of its routine in the education of the people, the Bureau of Vital statistics of the State Board of Health is in the habit of mailing to all wives whose marriages have been reported to the Bureau, a booklet intended to direct attention to some essential facts of preventive medicine and public morals and to arouse a desire for further information, which the Board is quite ready to meet. The booklet, "The New Family," is so attractive in its exterior that no one would think of throwing it away without a glance inside, and here the eye is caught by a succession of posters (reduced in size) with appropriate text, an important health lesson to each page.

The public health work of Chesterfield County has been advanced a step through a health unit established with the aid of the local Red Cross. For more than a year the State Health Department and the U. S. Public Health Service have been in coöperation with the county in sanitary work, and now the Red Cross has rented a headquarters, and is establishing a local public health association. At the headquarters are the offices of the association, the desk of the county nurse, the county sanitary officer, the home demonstration agent, with room for the division superintendent of schools if he will come in. Here will be assembled the health factors to the community who can work together without friction and avoid overlapping.

†

Virginia.—To enable the teachers of the Virginia public schools to acquire the information necessary for compliance with the West Act which provides for the physical inspection of pupils and the teaching of school hygiene, the State Board of Health has, in collaboration with the De-

partment of Education, established a correspondence course in these subjects, and already nearly a hundred teachers have enrolled for the instruction. So many inquiries have come to the health department that the commissioner has thought it wise to issue a brief statement about the course and the reasons for its establishment. The course of lessons offers free of charge a method of obtaining certain practical information without which no teacher can, after 1925, receive a certificate to teach in the public schools of Virginia. It consists of twelve lessons in physical inspection of school children, control of communicable diseases, personal hygiene and first aid to the injured. That the course will make any teacher a practical expert in any one of the topics is not to be hoped; but on the other hand no teacher can take the lessons and pass the examinations without having gained information which will be valuable to her and, if applied, profitable to her classes.

†

Wisconsin.—The Wisconsin State Board of Health has asked the legislature to provide sufficient funds to employ three more deputy state health officers. The present number is five.

The Wisconsin rule requiring terminal fumigation has been officially abrogated and thorough disinfection by approved means, under the personal direction of the local health officer, substituted. Terminal disinfection following certain diseases remains in effect.

The Wisconsin rule on smallpox quarantine has been modified to permit exposed persons in the household to go and come at will provided they submit at once to vaccination, regardless of previous vaccination or whether they themselves have had smallpox.

The Wisconsin State Board of Health, following years of inaction by the city of Sheboygan over sterilization of the public water supply, recently issued a formal order requiring the installation of chlorine apparatus by the city not later than March 15, 1921. The city is experiencing many cases of typhoid. Lake Michigan is the source of the water supply and the depository of the city's raw sewage. The order had been bitterly fought by a section of the local press, but all medical men of the city joined in recommending chlorine.

INDUSTRIAL HYGIENE AND OCCUPATIONAL DISEASE

Abstracted by DRs. E. R. HAYHURST and E. B. STARR.

Tuberculosis Among Polishers and Grinders in an Ax Factory.—I. This statistical study of an industrial establishment developed the fact that a certain group of workers, viz., “polishers and grinders,” are subject to a very high death rate from pulmonary tuberculosis, as indicated by the fact that the death rate from pulmonary tuberculosis per 1,000 population of polishers and grinders for the period 1900-1919 was 19.0 as compared to the general population of the mill district as a whole, of 2.0, and the mill population itself, of 6.5.

The excess death rate among the “polishers and grinders” indicates that 78 men have died during the past two decades as a result of industrial tuberculosis in these particular grinding shops.

II. The maximum number of deaths from tuberculosis among “polishers and grinders” occurs at the age of 45 years, instead of at 25 years as among the other operatives in the mill. This peculiar age incidence and the enormous excess death rate for the “polishers and grinders” are closely associated with the environmental condition of the industry, although the problem is complicated by the fact that the grinders also represent a foreign group of low social status and intemperate habits.

III. In view of the facts brought out by Winslow and Greenburg in regard to the dust content of the air of various work-rooms in the plant, it seems clear that the dust produced in wet grinding is largely responsible for the enormous incidence of tuberculosis found in connection with this industrial establishment. The practical conclusion to be drawn from this investigation is that wet grinding, instead of being a dustless and innocuous process, as has commonly been supposed, may, under certain conditions, be a dusty and exceedingly dangerous one, particularly when grinding wheels of natural sandstone are used. When such is the case, every effort should be made to substitute a dry-grinding process properly protected by the installation of exhausts.—W. H. Drury, *Public Health Reports*, Vol. 36, No. 5, Feb. 4, 1921.

A Medical Society's Report on Industrial Medicine.—The Cincinnati Academy's sub-committee appointed to investigate this subject collected a great deal of data and information which are summarized at this time. The report hopes to clarify and correct much misinformation about industrial medicine.

(1) Definition of industrial medicine. “Industrial medicine is the application of extended experience and specialized knowledge in the field of medicine to meet the peculiar problems which have presented themselves as a result of the employment of man under modern factory conditions. It is the knowledge of medicine, surgery, oral hygiene, sanitation, hygiene, safety, economics and psychology, daily promoted and intensively applied to groups of employees, for the purpose of preventing or shortening the disability due to illness and accidents, and for the purpose of adjusting unhealthful working and living conditions, of correcting unhealthy attitudes towards the conditions that surround the industrial job, as well as the community life, thereby increasing individual efficiency and mass production.”

(2) Scope. (a) Sanitation, (b) Hygiene, (c) Safety, (d) Medical supervision, (e) Education, (f) Medical and surgical relief, (g) Oral hygiene, (h) Home service.

(3) Purpose of industrial medicine. (a) The prevention of accidents and the prevention of disease. (b) The early discovery of abnormality and the prompt institution of remedial measures. (c) Prompt relief of minor conditions and adequate and proper attention for serious conditions. (d) Education of the worker away from bad hygiene, patent medicine, the quack and other harmful practices, toward the end that the general health of industrial workers will be improved, the efficiency of industry increased, society's burdens of low production, poverty, dependency and unrest lightened, and the value of man's labor to himself increased and his work expectancy period lengthened.

(4) Extent of industrial medical practice in Hamilton County.

(5) Qualifications for industrial medical practice. "A sound education; ample practical experience in medical relief; a well-rounded knowledge of preventive medicine; a thorough knowledge of vocational hygiene; an understanding of our present-day social and economic problems, and an ability and willingness to leave general practice and enter industry with this knowledge and apply intensively to groups in a practical manner the best that the medical profession has to offer."

(6) Remuneration of industrial physicians.

(7) Relation to the Industrial Commission.

(8) Relation to public health agencies.

(9) Relation to the medical profession.

(10) Status of industrial medicine at the University of Cincinnati.

(11) Status at large.

(12) The organization of the Cincinnati Association of Industrial Physicians.

(13) The conclusion, in the nature of recommendations (1) that the Academy recognize industrial medicine, as defined, as a distinct and legitimate branch of the profession. (2) That it lend its influence towards the adoption of industrial medicine as a part of the curricula of the University of Cincinnati. (3) That it encourage its extension in Hamilton County. (4) That a committee be appointed to keep the Academy informed on the subjects. (A communication from Dr. J. A. Watkins, Cincinnati, states that the recommendations were accepted by the Academy.)—*Cincinnati Jour. of Medicine*, Vol. I, No. 12, January, 1921, pp. 280-284.



Poisoning Dangers in Manufacturing Zinc Chloride.—The production of arseniuretted hydrogen (arsine) from the presence of arsine in commercial hydrochloric acid as mixed with zinc ashes and flux skimmings in the manufacture of zinc chloride, resulted in a fatal case from the inhalation of the gas produced. The worker was engaged in shoveling the zinc ashes into a large beck. He went home complaining that he did not feel well and had severe pain in the stomach and vomited. He developed a marked cyanosis and shortness of breath. The next day his skin became brown, and

delirium set in. His temperature remained normal and the pulse about so. He died comatose on the fourth day. The post-mortem findings are given by the author but were not characteristic. Chemical analysis of the substances used showed the formation of arsine and hydrogen sulphide, and stress is laid on the fact that the man breathed a fatal dose before he felt any inconvenience, or at least enough to make him move away. The very striking light brown color of the skin was also noteworthy. Similar cases are noted in the literature.—M. Bannister, *British Med. Jour.*, Sept. 25, 1920, p. 470.



Compensation for Industrial Tuberculosis.—Great Britain and Ireland (and we are informed the Union of South Africa) began the compensation for fibroid phthisis or silicosis of the lungs as an occupational disease in 1918. Silicosis of the lungs was added to the list of 24 occupational diseases already specified. The Act provides for "The payment of compensation by the employers of workmen in any specified industry or process or group of industries or processes involving exposure to silica dust," who are certified to have suffered disability or death from silicosis, or silicosis accompanied by tuberculosis.—*Bulletin of the International Labour Office*. Vol. XIV, Nos. 1-3, 1919, p. 58.



High Temperatures and High Humidities in Metal Mines.—Sayers gives the results of a preliminary study of this subject. A summary is given for wet bulb temperatures between 90° and 100° F. with a relative humidity of 89%, then with wet bulb temperatures of 85° to 86° and a relative humidity of 96%. In each of these two conditions blood pressure, body temperature, pulse rate, perspiration, dizziness, weakness, mental sluggishness, nausea, headache, and loss of weight were studied. Habitation was a prominent factor, and marked influence in the nature of increased body temperature, decreased blood pressure, and disturbances in other symptoms mentioned, were found. Some of these disturbances required one or two hours after the subject had reached the cool air to return to normal.—R. R. Sayers, *Public Health Reports*, Jan. 28, 1921, pp. 116-130.

Relation Between Short-sightedness and Occupation.

—It is very doubtful whether the use of the eyes for near work has anything to do with the production of myopia (short-sightedness), and certainly nothing has been definitely proved. The hereditary acquirement is disputed but certain diseases associated with considerable coughing may be direct causes, as measles, whooping-cough, and bronchitis. This is due to the intermittent increase of intra-ocular pressure during coughing spells. Certain occupations—namely those involving heavy lifting in a stooping position, particularly in those who appear to take no other exercise, as, those who at intervals carry heavy weights, are associated with the onset or increase of myopia. This explains why a large number of cases of myopia occur among such workers as porters, carters, car-men and others who do not use their eyes for near work. Boxing, wrestling, cycling, rowing, or digging may be causes, particularly in youth when tissues are softer and more pliable. When anyone tries to lift a heavy box which is at the limit of his strength he experiences a great feeling of tension in his eyes. There is a tendency for the posterior part of the eye-ball to give way under the tension, resulting in elongation of the eye-ball which is the condition typical of myopia, in which the rays of light focus in front of the retina instead of squarely upon it. Any occupation which involves heavy lifting is not suitable for a short-sighted person.—Eldridge-Green, *Lancet* (London), March 5, 1921, pp. 469-471.



Four Years of the Framingham Demonstration.

—Tuberculosis is responsible for one in every ten deaths. It is responsible for one in every three deaths among industrial workers. The Framingham sickness survey indicated a sickness rate of 1.8% for incapacitating illness, 6.2% for all forms of illness and 0.24% for tuberculosis, while a series of medical examination campaigns covering about three-fourths of the population, disclosed an incidence for active tuberculosis of 1%, for arrested tuberculosis of approximately 1%, and a prevalence of illness and disability of all types of 77%. The ratio of known active cases to annual deaths was found to be 9 or 10 to 1. A city of 100,000 with 100 deaths a year from tuber-

culosis should be provided with at least 100 hospital beds. Out of the average 100 people in a community probably 90 have tuberculosis infection. Of these two have active or arrested tuberculosis disease. Finally 10 out of the 100 are probably eventually going to die of tuberculosis. During the four years, out of the total of 356 early and advanced cases, 21% died. A careful study indicated that about 5% should have been saved. Hence, in spite of all measures the minimum of 16% would remain as the irreducible standard for mortality. Among etiological factors, abnormal environment, low wages and economic conditions, nutritional diseases, and certain race stocks are chiefly to be considered. Since the demonstration began the mortality rate per hundred thousand has fallen from 121.5 to 84.2, a reduction of about one-third. "Tuberculosis is not merely a medical problem; it is not merely a health problem; it is a social problem, in the broadest sense, requiring a comprehensive engineering plan, if the possibilities for disease control are to be realized to the full."—D. B. Armstrong, *American Rev. of Tub.*, Vol. IV, No. 12, February, 1921.



Physical Examination of Industrial Workers.

—The average time consumed in making regular physical examinations at establishments in 15 industries for 410,106 employees, about one-fifth of whom were women, was eight minutes per person examined. An earnest effort was being made in the majority of plants reporting to place defectives, rather than eliminate them from industry. The average percentage of rejected applicants for employment was only 4.6 and, by eliminating certain special cases, was only 2.8. Objections to physical examinations on the part of prospective or actual workers were negligible. Grouping of workers according to physical examinations suggest the following classes:

1. Persons physically fit for any employment.
2. Fit for any employment but below par in physical development.
3. Fit for any employment when specifically approved for it by examining physician.
4. Unfit for any employment.—F. L. Rector, *Jour. A. M. A.*, Dec. 18, 1920, pp. 1739-1741.

Health Service in Industry.—It is the aim of this report to offer a broad view of present practices and accomplishments in the field of industrial health work. The report is based on material gathered through field investigations and questionnaires by the National Industrial Conference Board in cooperation with the Conference Board of Physicians in Industry, which organization acts in an advisory capacity to the National Industrial Conference Board. The first portion of the report deals with the extent and character of health supervision in New England industries. The industries studied comprise abrasives, leather, metal trades, paper, rubber, shoes, textiles and sporting goods. Altogether, the 90 plants studied employ a total of 221,500 males and 95,500 females. In these plants, 37 full-time physicians were employed, 63 part-time physicians, 1 full-time oculist, 7 full-time dentists and 6 part-time dentists and 204 nurses, of whom 27 were home visitation nurses.

The orientation of the Medical Department in the industries studied shows the Medical Department responsible to the chief executive of the plant in 39 cases, to the employment manager in 44 cases, and to an insurance company in 5 cases. In the latter the entire medical and nursing personnel was supplied by insurance companies carrying the compensation policies of the establishments. The importance of branch dispensaries in large industrial establishments is pointed out, if unnecessary loss of time on the part of the workers is to be avoided. One of the criticisms made in the report is the general lack of adequate records of the work in dispensaries. Under the head of "Staff organization" it is shown that industries having marked occupational hazards, even though the number of employees is small, demand a relatively larger medical staff than the less hazardous industries. The report contains the standardized first aid treatment of injured persons which was adopted in 1914 by the Conference Board of Physicians in Industry.

In 25 of the 90 plants studied, physical examination was a requirement. Three reasons are given for rejecting an applicant for employment, viz., the danger to himself, to others, and to property. In this connection the report speaks of the necessity of the spirit of fair play on the part of the industrial physician, as between the inter-

ests of the employee and those of the employer. Reference is made to an investigation of industrial medical practice made by the Conference Board of Physicians in Industry in which it was pointed out that while 30% of all men eligible for military duty were rejected in the draft on account of physical defects, only 4.6% were found by the Board to have been rejected from industrial employment on account of physical defects. The report contains the standardized method of physical examination and the standard examination record form adopted by the Conference Board of Physicians in Industry, and also the Conference Board's classification of employees based upon physical fitness. In Class 1 employees are "physically fit for any work"; Class 2 "physically under-developed, with some slight anatomical defect, otherwise fit for work"; Class 3 "fit only for medically supervised employment"; Class 4 "unfit for any employment." The statement is made that "experience has shown that the large majority of industrial workers falls in Class 2."—*National Industrial Conference Board, Research Report, No. 34, Jan., 1921.*



A "Massage Centre" for the Treatment of Injured Workmen.—The writer gives the chief reason for the formation of a "massage centre" as the amount of time lost by the workmen from injuries being capable of reduction. The centre was in a place available to 45,000 employees, 80% of whom lived within a five-mile radius. The Medical Association acted as adviser to the procedure. The employer's medical officer sent such men as come under the Workmen's Compensation Act as he thought would be benefited. The personnel consisted of the employer's medical officer, and two masseurs, who, as the result of army experience, had training in athletic and electrical treatments. A list of the equipment used is given. The paper discusses illustrative cases, electrical treatments, the cost of establishment and the current expenses of the centre,—the total amounting to about \$2,000. The results of the first year's working of this centre show that both employer and employee have benefited and the employers have recently purchased accommodations for a permanent establishment.—T. L. Llewellyn, *British Med. Jour.*, Sept. 18, 1920, pp. 434-436.

PUBLIC HEALTH LABORATORY NOTES

Abstracted by ARTHUR LEDERER, M. D.

Sterilization of Instruments.—Neither sodium carbonate nor sodium bicarbonate will prevent the rusting of instruments. It is the carbon dioxide in the water that causes the instruments to rust. Neither sodium carbonate nor sodium bicarbonate combines with the carbonic acid of the water. In order to prevent the rusting of instruments 2.5 gm. of sodium hydroxid (NaOH) should be added to 1,000 gm. of water. The sodium hydroxid should be allowed two minutes in which to dissolve and to combine with the carbonic acid of the water, before the instruments are put in the solution.—A. Rebula, *Zentralbl. Chir.*, 47, 1297 (1920); *Jour. A. M. A.*, 76, 559 (1921).



Studies of the Nasopharyngeal Secretions from Influenza Patients.—From the filtered nasopharyngeal washings from early cases of uncomplicated epidemic influenza and from lung tissues of experimental animals, the authors have cultivated minute bodies of characteristic morphology which are strictly anaërobic, are filtrable, and withstand glycerolation for a period of months. The effects on the blood and in the lungs of rabbits and guinea-pigs injected with these bodies are similar to those produced by the filtered and unfiltered nasopharyngeal secretions from early cases of epidemic influenza.—Peter K. Olitsky and Frederick L. Gates, *Jour. A. M. A.*, 76, 640 (1921).



Bence-Jones Proteinuria.—A large quantity of albumin in otherwise negative urine in a patient with normal renal function and normal blood pressure and a marked secondary anemia should suggest the possibility of Bence-Jones proteinuria, especially when bone lesions are present. Bence-Jones proteinuria is significant from a diagnostic and from a prognostic standpoint of multiple myeloma, since it occurs in 80% of all cases, and usually is followed by death within two years. The quantity of Bence-Jones protein excreted is independent of the protein intake, evidenced by an approximately constant excretion for three-hour

periods, irrespective of changes in diet. The amount of Bence-Jones protein excreted during the night when food is not taken is only slightly less than the amount excreted during the day. There is not a constant relationship between the quantity of Bence-Jones protein and the total urinary nitrogen excreted. As the finding of Bence-Jones protein in the urine led to its detection in the blood, it may be possible that other proteins of a similar or dissimilar nature are in existence in the blood and are not excreted by the kidneys.—Waltman Walters, *Jour. A. M. A.*, 76, 641 (1921).



Effect of Antisypilitic Treatment on the Colloidal Gold Reaction.—The colloidal gold reaction shows a tendency to decrease under the influence of antisypilitic treatment, but may remain unchanged or even increase in intensity. The more pronounced the colloidal gold curve the less it is affected by treatment. On the other hand, the lower curves are more readily brought down to normal. A positive colloidal gold curve may be of diagnostic value in cases having received previous treatment, but a negative reaction is of less significance. A "provocative" reaction may appear in the spinal fluid as well as in the blood Wassermann as a result of the institution of treatment. The colloidal gold reaction does not parallel or follow the clinical symptoms of the progression or regression of the disease. If the colloidal gold curve changes after treatment, it increases or decreases in intensity and occasionally drops back into another zone, but is usually a symmetrical curve and does not become atypical. The Nonne and Wassermann reactions tend to parallel the colloidal gold curve in its behavior to treatment and in the provocative reaction. The cell count is increased only in spinal fluids from cases showing affection of the central nervous system, but even in such cases it is not always constant and bears very little relationship to the other routine tests or to clinical signs, improvement or provocative reactions.—Margaret Warwick, *Arch. Int. Med.*, 27, 233 (1921).

The Sachs-Georgi Reaction for Syphilis.—The technique employed is as follows: The serum or spinal fluid to be tested must be absolutely clear after being centrifuged, free from cotton fibers or other particles. It is inactivated in the water bath at 56° C. for one-half hour. Three drops of serum are then mixed with 1 cc. of sterile salt solution (0.85%). To this diluted serum, 0.5 cc. of cholesterinized alcoholic beef heart antigen, which has been previously diluted 1 to 6 with 0.85% salt solution, is added. The tubes are then gently agitated and placed in the incubator at 37° C. for from 18 to 24 hours. A reading is taken at this time; most of the positive serums will have flocculated. The tubes are kept at room temperature for the next 24 hours, and final readings are then made. An examination of 1,042 serums and cerebrospinal fluids by means of the Wassermann and the Sachs-Georgi reactions demonstrated a close parallelism of the two reactions (92%). In sixty-two cases in which the Wassermann reaction was negative while the Sachs-Georgi reaction was positive or doubtful, the clinical history or examination revealed evidence of syphilis in 58%. The technic of the Sachs-Georgi reaction is simple, only one biologic reagent is required (antigen) instead of the four used in the Wassermann test (antigen, amboceptor, complement and red blood cells). This simplicity adds to the uniformity of the results. The ultimate specificity depends on the preparation of a proper antigen. Because of its simplicity, and the fact that it is frequently positive in syphilitic cases when the Wassermann test is negative, the authors are of the opinion that the Sachs-Georgi reaction offers a valuable aid in the routine examination for syphilis when used in conjunction with the Wassermann reaction.—S. A. Levinson and W. F. Petersen, *Arch. Dermat. and Syph.*, 3, 286 (1921).

Histo-Pathology of Epidemic (Lethargic) Encephalitis.—In the nervous tissue from cases of epidemic (lethargic) encephalitis within and without the nerve cells minute forms have been observed, to all appearance consisting of a central generally basophil particle and of a delicate little stainable body, irregularly round or oval in shape. For these forms the term "minute bodies" is proposed *pro tempore*. The bodies are generally discrete, and provided with

one granule, but dumbbell shaped forms occur as well as others with two central particles arranged in pairs. An as yet not quite definable relation seems to exist between these forms and a granular, pigment-like material occurring within the nerve cells in places where brown or black pigment is not generally found. Minute forms, similar in shape, structure, and staining properties to those observed in the nervous tissue, have been traced within and without the cells infiltrating a salivary gland from an acute case of the disease.—C. Da Fano, *Brit. Med. Jour.*, No. 3135, p. 153 (1921).



Acute Respiratory Infection in Man Following Inoculation With Virulent Bacillus Influenzæ.—Virulent influenza bacilli, when injected into the nose and throat of healthy volunteers, may excite in them an acute respiratory disease, similar in many respects to influenza, but falling short of the typical clinical picture. In such cases influenza bacilli, biologically identical with those inoculated, may be recovered from the discharged as long as symptoms persist and often for some time thereafter. Filtrates of *B. influenza* cultures, when similarly injected into two healthy volunteers, produced neither local nor constitutional reaction. The inoculation of healthy volunteers with virulent hemolytic streptococci may in some cases induce an acute follicular tonsillitis, with fever and leukocytosis. A virulent pneumococcus type 4 on the other hand, was injected into the nose and throat of two healthy volunteers with impunity.—Russell L. Cecil and Gustav I. Steffen, *Jour. Inf. Dis.*, 28, 201 (1921).



Enumeration of Blood Cells and Bacteria.—The procedure described by the author, although based on the same general principles as Wright's method, differs in that it can be used to count not only bacteria but also human blood cells, and that the standard consists of a permanent suspension containing an exactly determined number of corpuscular elements per unit volume. The corpuscular elements selected for the preparation of the standard emulsion are the red corpuscles of the blood of a hen. The method is described in detail.—G. Dreyer, *Lancet, London*, Jan. 29, 1921; *Jour. A. M. A.*, 76, 684, (1921).

Dilution Unit in the Wassermann Test.—

The author determines the smallest amount of serum which will induce the positive reaction, calling this 1/10 as the unity. He dilutes the serum with physiologic saline (9/1,000). When the reaction is positive at 1/40 he calls this 4 units; at 1/100, 10 units; at 1/200, 20 units. By this method of dilutions it is possible to record with precision the reaction by the number of units.—E. Peyre, *Presse Médicale, Paris*, 29, 56 (1921); *Jour. A. M. A.*, 76, 687, (1921).

**Infection With *B. Fæcalis-Alkaligenes*.**—

The number of cultures made and the great predominance of *B. fæcalis-alkaligenes* in all of them leaves no doubt that this organism was the causative agent in the production of the lesions, which were those typical of severe infection by the typhoid organism. The literature available mentions the occasional production of disease simulating typhoid fever by *B. fæcalis-alkaligenes*, but details are lacking.—Mazzyck P. Ravenel. *Jour. A. M. A.*, 76, 720 (1921).

**Xanthochromia.**—

The author reports three cases in which the spinal fluid obtained by lumbar puncture was of a bright yellow colour, and discusses the significance of this condition. Xanthochromia has been found in such a variety of spinal conditions that no etiological factor would seem to be common to all. It has been observed in neoplasms of the cord and its membranes, gumma of the meninges, adhesions between the membranes, vertebral tumours, and fractures, tuberculous meningitis and spondylitis, spinal gliosis with syringomyelia, multiple sclerosis, pachymeningitis, and several other conditions. The yellow fluid by itself is perhaps not of much importance, but when in association with the color there is an increased coagulability of the fluid, then there is practically always some obstructive lesion of the spinal canal. The obstruction to the flow of the cerebrospinal fluid allows of the formation of a pocket in which the fluid stagnates, and into which various elements pass by transudation from the vessels within its walls. It is sometimes possible to obtain hæmoglobin reactions in certain cases of xanthochromia, and it has

been suggested that there are minute hæmorrhages into the spinal canal and ventricular spaces to account for the yellow coloration, and it may be that decomposition of the hæmoglobin has proceeded so far in the other cases that one fails to discover traces of it. It must be admitted, however, that the occurrence of yellow spinal fluids is not yet satisfactorily explained.—Levison, *Arch. Int. Med.*, Oct. 15, 1920.

**Mechanism of Bacillus Carrier State.**—

The author presents experimental evidence on the mechanism of the carrier state. It is shown in the case of the Friedländer bacillus carriers that the breeding place of the bacteria is in a definite focus—the tonsil. From this point the organisms are discharged into the open pharyngeal cavity, and at times they may be introduced into the nose. Of 85 individuals 5.8% were found to be carriers of *B. Friedländer*. It was impossible artificially to produce a carrier state by repeated inoculation with *B. Friedländer*. The conclusion reached is that the carrier state depends on a focus of diseased tissue which affords a breeding place for the bacteria.—A. L. Bloomfield, *A. Rev. Tub.*, January, 1921, 847. (D. G.)



Experiment in Transmission of Malaria to Monkey.—The experiment consisted of repeated intravenous injections to a robust *Macacus cynomolgus* of 12 cc. of blood containing malarial parasites drawn from a patient with tertian malarial fever. Clinical observations revealed only a slight thermic elevation a few hours after the injection, but all morphological examinations of the blood of the animal gave negative results.—E. Bertorelli, *Annali d'Igiene*, November, 1920, No. 11 (E. C.).

**Avirulent Diphtheria Bacilli Not Pathogenic.**—

Certain facts stand out among the results of the experiments. Two points, however, are of great importance. First, avirulent diphtheria bacilli are devoid of pathogenic importance for man; and secondly, the carrier of avirulent diphtheria bacilli does not constitute a menace to the health of the community.—W. L. Moss, C. G. Guthrie and B. C. Marshall, *Johns Hopkins Hospital Bulletin*, 32, 37 (1921).

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HEALTH EDUCATION IN INDUSTRY

C. E. FORD, M. D.,

*Medical Director, General Chemical Company,
New York City.*

Read before Sociological and Industrial Hygiene Sections, American Public Health Association, at San Francisco, Cal., September 14, 1920.

The industrial health department can be made the strong right arm of the public health department. A part-time physician no longer suffices for a plant. He should be a full-time man with special training. If industry can pay \$2.50 per employee per year for health, the community ought to increase its health appropriations.

TO SECURE the attention of a group of people is not dependent upon any definite predetermined formula. This is true whether the group be that of a municipality or any political unit or the members of an industrial organization. At least as many factors enter into the problem of health publicity as there are social elements in the community and each must be met with special consideration. If progress is obtained, the peculiarities, personal and communal, racial and religious, must be recognized or anticipated and treated individually with mass considerations. Notwithstanding the necessity of these implied qualifications on the part of the health administrator the most successful endeavors seem to have been made so by

fortuitous circumstances, or by effort in the direction of least resistance.

In the early history of medical service in industry the employment of a physician was considered an evidence of a benevolent attitude on the part of the employer. The protection secured against excessive costs resulting from accident and injury, the shortening of the period of disability, the relation of the doctor to relief agencies and recognition of the doctor's potential value as an intermediary in industrial relations established the plant physician, more or less, as a member of the operating staff. As a result of meritorious work on the part of a few pioneers in the field, it became evident that pre-employment examinations, as well as periodic re-examina-

tions, prolonged the usefulness of the employed to the industry, to the individual, to his family, and therefore to society, and has also resulted in the accumulation of facts that will clear up the hazy notions with respect to the hazards of certain occupations.

Probably the greatest opportunity for the promotion of the public health has arisen through the rapid development in industry of medical departments, manned as these departments should be by medical men giving their full time and thought to the conservation of human lives.

The doctor or industrial surgeon and the industrial nurse are the agencies through whom educational measures must reach the people. Good and effective as they have been, there is considerable to be said in criticism of both. Such critical intimation as I shall make will be directed toward the doctor, as I believe that the nurse is and should remain an adjunct to the medical man's service, rather than to assume independence of action—at least in this field.

In the discussion of our subject, a review of the relationship of the public health department, of the medical profession and of the public would seem, perhaps, profitable:

Public health is a field which embraces sociology, engineering, chemistry and bacteriology, as well as medicine, and the man with administrative gifts may have qualified for his post through any one of these allied sciences. The fact of being a competent physician does not make him a qualified health officer. Public health is a science and an art in itself and peculiar to itself, the essential being that the administrator shall have studied and practiced this science and art. If he be medically trained, his position, with the present professional viewpoint, is strengthened with his profession and the public.

As Drake has well stated, a health department in performing the functions

imposed upon it by law, must reach, more or less directly, every person within its jurisdiction. The past generation has witnessed radical changes in the theory of preventive medicine. Officials are no longer permitted merely to meet emergencies as they arise. Health promotion has become more important than disease prevention, and disease prevention has come to be more regarded than disease suppression. The archaic policy of acting only in the development of emergency, and of merely being ready to make the best of a bad situation in repairing damage after it has occurred, has been relegated to a less enlightened day. In carrying out its work of prevention, a health department must endeavor to arouse the interest and attention of individuals rather than of the masses or classes.

An aggressive health department employs every possible means of publicity—the public press, as well as the other agencies of which I shall speak later—in an effort to maintain a personal contact. Unfortunately public health publicity costs money and, to be obtained, must be paid for. The controllers of the public purse have not yet arisen to the importance of this function and the endeavor has failed, excepting in the few instances in which private funds are available for the promotion and support of publicity. The success or failure of any movement for the betterment of public health depends, to a great extent, upon the attitude of the medical profession. In the main, that attitude is sympathetic and encouraging. However, there have been measures of very decided public value involving principles of social and economic worth that have been so strongly opposed that their value has been lost to the community. The canons of the medical profession provide that the first duty of the physician is to the individual, whereas in preventable diseases, the first duty is to the public.

In the volumes of biologic essays pre-

pared by Sir William Osler's fellow-physicians to celebrate his 70th birthday, which lamentably appear rather as a memorial, the New British Ambassador presents certain reflections upon the medical profession which are as stimulating and suggestive as they are courteously phrased. More than any other of the great professions, Sir Auckland Geddes says, physicians lack "the spirit of citizenship," the willingness "to bear their share of the burden of the Government." Their devotion to science and to the service of individual healing is paramount; they do not conceive of these things in their relation to the nation. "I have heard teachers in medical schools say that their whole duty to their students was to teach them to prevent disease, to treat the sick and to understand the method of science." Sir Auckland Geddes denies this, though to do so "seems to me, in my purely scientific moods, almost discreditable."

The forces which determine national progress, and with which a statesman is primarily obliged to grapple, are not recognized in any science to which the physician is trained. They are the forces of "mass emotion," largely blind, inarticulate and groping, yet supreme and indomitable, forces of the racial genius. Just at present these are forces with which the physician, if he could only recognize the fact, is peculiarly qualified to deal, "an emotion of human betterment, finding expression in centers for child welfare, in schemes for housing the working classes, in the establishment of ministries of health, of reconstruction and research." In brief, "we are at this moment in the power of a worldwide emotional storm, the full effects of which are not yet manifest," but which will center in the betterment of the nation's health and of the more purely human relationships. Meantime the medical profession, "with brilliant exceptions," is composed of men who are "immature as citizens" and whose citizenship, such as

it is, "is as divorced from their technical knowledge as is the citizenship of the speculative builder when he jerry-builds new slums." The world is "moving on to the greatest of its revolutions," but the majority of physicians, "who might be its far-seeing leaders," are "blind and babbling of industrial unrest."

Throughout a relatively brief but active relation with the medical profession it has been observed that the individual doctor has been so occupied with the specific case that he has all too frequently permitted others to direct the social, economic and professional adjustments that modern progress has made necessary—this, notwithstanding that the professional interests and those of the public are identical and should be solved and applied only by a socially-minded medical leadership. The present day is intolerant of isolation from affairs. With others, the doctor must become active and not only support and direct actively but create those remedies for the ills of society with which he is or should be familiar. Unless medicine does this and makes apparent its group strength before the people, the people will all too frequently be victimized by the various cults and pseudo-medical interests that quickly grasp the importance of public control and especially with legislative and governmental interests.

Science has developed facts that have afforded remarkable opportunity to progress, but, in so doing, serious obligations have been imposed upon the doctor. Changes in health administration have, at times, been radical, perhaps revolutionary, but no more radical and no more revolutionary than the changes that have come to our scientific thought. The modern health administration, in asking much, is likewise giving much to the physician. The individualization of health work, instead of threatening the material interest of the doctor, actually benefits him in many ways. The more intimately the individual doctor becomes

acquainted with the aims and purposes and underlying motives of a modern health department, the more valuable his influence becomes to the people of his community and the more useful the department becomes to him in the pursuit of his practice.

Health officials are now urging periodic physical examinations for all persons as the means of detecting insidious organic diseases in their incipient and easily curable stages, and while the medical profession may be called upon at certain times to render service gratuitous or with small direct return in such examinations for the purpose of education and demonstration, it is true that the establishment of this excellent custom is not only likely to save or prolong the lives of thousands but in the ultimate brings largely increased returns to the physician. The more that people think health and talk health, the more generally they seek medical counsel and guidance, consequently the more generally the physician is employed. It is invariably true, whenever there are established anti-tuberculosis leagues, with their dispensaries, medical nursing service, together with the educational and publicity campaigns essential to their success, those medical men specializing in tuberculosis, as well as the general practitioner, have an increased clientele among those actually suffering from tuberculosis and seeking treatment for it, as well as those who come to think seriously of their own physical condition on account of the agitation of the subject. This is similarly true in communities in which campaigns against venereal diseases have been undertaken. In such communities the venereal specialists and general practitioners report an increased demand for this service and, of course, this means that the uninformed have not sought the advice of the advertising or itinerant quack. This well illustrates the fact that that which is best for the people of the community and that which may be over-insistently urged upon

them, redound to the material advancement of the reputable physician.

The physical examination of school children with the discovery of the enormous number of defects of the upper air passages of the ears and mouth, heretofore regarded as relatively harmless, has conferred enormous physical benefit to the community as well as to the financial state of the medical man. This same helpful attitude is maintained by the diagnostic laboratory in its relation to the medical profession. While such laboratories are maintained for the benefit of the people as a whole, the service of the laboratory is rendered almost wholly through physicians. Occasional specimens are received from laymen but the name of the attending physician always accompanies the specimen, and a report sent to the physician, and in practically every instance it is found that such specimens are sent with the advice of the doctor. In the case of Wassermann tests, it is doubtful if the laboratory ever received a specimen, except from a physician. This is similarly true of specimens from patients suspected to be suffering from diphtheria, typhoid and the other communicable diseases. In actual practice the laboratory is maintained wholly for the convenience of the medical man, saving him hours of labor and no inconsiderable outlay of money. If one may judge by the increasing demand for laboratory service, this convenience is becoming generally appreciated. On the other hand, the more generally the members of the medical profession engage in modern health activities in their own community, the more quickly they utilize the service of the staff of the several divisions of the department, the more constantly they employ the services of the laboratory for the exact diagnoses, the greater assistance they are rendering the government in meeting its obligations to the people.

The closest possible relation should exist between the private or industrial

physician and the public health official. Public health departments heretofore have been limited in their relations with individuals for the purpose of teaching personal hygiene. The industrial health department can be made the new and strong arm of the public health department in bringing about precaution in matters of health. Morbidity statistics not now available may be secured, as well as organized assistance in times of epidemic.

The demand for this kind of service by the far-seeing executive, unappreciative of the necessary qualifications of a medical director capable of undertaking the responsibility, has led many medical men, the recent graduate, the unsuccessful or moderately so, into the field of industrial medicine; but until qualified men are created by university training or long and varied experience, the cause of industrial medicine and in turn of industry itself, will not obtain the largest measure of benefit. It no longer suffices for an industrial organization of any size to employ a part-time physician who utilizes his job to pay office rent or automobile upkeep. The physician who considers accident work or casualty surgery as a mere "pot boiler" over a period of financial stress will hardly prove ornamental to his profession.

To meet the present-day requirement of a medical director, service director, or however he may be characterized, it seems that the following qualifications are essential:

He should be a man of good general education, upright in bearing and demeanor, possessed of tact and judgment. He must have had a sound professional training in a college stressing the great basic foundations of his future work, namely, anatomy, physiology and pathology, a general hospital training of not less than two years with special attention to surgery.

He should have at least five years of general practice, in that a knowledge of man and his foibles may be acquired.

During this period it is necessary that the future industrial physician should maintain a connection with the public health agencies, such as the city health department with its various dispensaries, the general dispensary, and other public medical service, in order to develop the social viewpoint as well as to broaden professional skill.

He should be capable of making elementary physical, psychological and psychopathical observations.

The industrial physician should have a knowledge, not necessarily profound, of the fundamentals of industrial relations; these are widely applicable and include applied preventive medicine, accident prevention and the methods leading thereto.

He should have knowledge of employment methods; some notion of job analysis; knowledge of race problems, knowledge of industrial training, apprenticeship, continuation schools for training in particular jobs.

He should have knowledge of the special problems relating to the employment of women and children; some knowledge of pensions and insurance, including liability, group and social; some knowledge of plant organization, which is likely to prove effective in dealing with the problems of labor.

He should have knowledge of the hours of work in relation to fatigue and output; knowledge of shift systems, rest periods, regularity, absenteeism, etc.

He should have at least a superficial knowledge of the security and continuity of employment in slack seasons, while convalescing from accident or disease, in case of labor-saving improvements, as well as with the advent of old age, the transfer and replacement of misfits, or as has been said "fitting the square peg to the round hole."

He should have a general knowledge of physical working conditions, safeguards, disagreeable gases and dusts; heating, lighting, ventilation, locker rooms,

wash rooms, rest rooms, restaurants, hospitals, laundries, toilets, showers, plant beautification, drinking water. Of course, he should be responsible for the physical examination of applicants and the periodic re-examination of employees, as well as the medical attention to families of employees when such is supplied.

He should have very definite knowledge of housing, transportation, recreational and educational facilities, and at least some knowledge in relation to the cost of living according to local standards.

He should be familiar with the follow-up work, especially among new employees and with the injured; the replacement of injured and crippled employees.

He should have at least some knowledge of the athletic and social activities, company stores, commissaries, the type of house suitable for economic administration and housing problems generally.

He should be familiar with labor turnover and its cost; designs and data for the construction and operation of hospitals, lunch rooms, neighborhood and community houses; general education and Americanization, together with a knowledge of broad methods of raising the standard of employees' living conditions and ideals.

And as Merideth has recently pointed out, it is time the doctor realized his concern in the human, normal as well as sick; that his ideal should be the human body always well—his shame, the human body sick. It must be realized that health, like disease, is a medical problem and that if we have a responsibility for the sick, our responsibility is nevertheless for the well. We, in industrial medicine, are seriously at fault in not devoting more attention to increasing knowledge of the conditions of health.

In the foregoing I have perhaps wandered far afield, with the object, however, of indicating that the medical man with a broad view and such knowledge, how-

ever general, will be of such great value to his organization and every person in it, as to command the highest respect, wield a constant influence, find his post seeking him, and incidentally fix his compensation.

That which has made America great in industry is her faculty of bringing together energies hitherto rambling and misdirected into a rounded, concrete whole with largely amplified production. The mainspring of production or success is individual action and not state action. Success is nothing more nor less than opportunity for the individual. The enlightened business man of today sees clearly that the measure of his success is almost directly in proportion to the degree of opportunity his operation creates for others. But of what value is opportunity, lacking its essential adjuvant—the individual in good health.

In the United States there are 1,500,000 people constantly sick with preventable diseases, and 8,000,000 men between the ages of 18 and 45 are physically or mentally subnormal. While most of us are born with good health, we have but a brief existence before we carry within us, or are exposed without, to an agency of destruction. From a recent report by Irving Fisher, we are informed that there are approximately 3,000,000 persons in the United States suffering from some form of sickness, of whom 1,100,000 are in the working or productive period of life, three-fourths being actual workers who must lose at least \$700 per year which aggregates \$550,000,000. The expense of medicine, medical attention, hospitals, extra food, etc., at least equals this amount. Thus we have a total cost of illness amounting to \$1,100,000,000, at least one-half of which is preventable.

The sick man is a burden to the community, while the well man is an asset. Out of every hundred who are 25 years old today, 36 will be dead at 65, 53 dependent upon relatives and charity, 6 self-supporting and only 5 well off. It

has been shown that of families dependent upon charity 77% of the members were physically unfit.

A most effective method of reaching the employee and his family is through the house organ, which, if well edited, is a welcome visitor to the domestic circle of each employee. It is well, of course, that the printed column should be supplemented by presentations by the medical staff of the organization, who should reach groups of employees orally or directly, as opportunity may offer, by means of the stereopticon or the motion picture. It has been my practice in lecturing to groups of employees and their families to discuss industrial medicine in accordance with the following scheme, closing the course by discussing problems and hazards peculiar to our own industry.

Physical examinations, their immediate and remote value, are considered by likening the human body to some well-known machine or device in the plant and demonstrating the analogy between the worn-out and exhausted parts and the organs of the human body, emphasizing the vital importance of maintenance and repair. This method can be readily applied to such organs as the kidneys, lungs, liver, circulatory apparatus, etc. The acute and chronic infections, whether of industrial or general origin, and their importance are pointed out.

The subject of personal hygiene is simply presented, utilizing the diseases or defects that have come to recent attention in the plant as a basis for illustration.

The subject of sanitation is presented systematically by following the plan of organization of modern health departments and their various divisions; for instance, the department of sanitation. The discussion includes the nuisance; sewerage and sewage disposal; garbage, its collection and disposal; domestic animals, flies, mosquitoes, etc.; together with the importance of good housing and

the effects of bad housing and lodging houses. The spot maps made by health departments indicating the highest tubercular rate, the highest communicable disease rates (excepting perhaps typhoid fever), the greatest juvenile delinquency, crime, drunkenness, and so on through the entire category of social ills, match exactly the spot maps indicating the greatest housing congestion.

Some years ago the Department of Health of Cleveland, through Miss Chadsey, made a study of two districts, one being in the old crowded section of the city and the other in an outlying section, Newburgh way, which is composed largely of employees of the steel mills. Rents were practically the same. In the first district in 1907 to 1914, there were 980 cases of tuberculosis recorded, 52 per 1,000 of population. In the second there were 450 cases, or 28 per 1,000 population. In the first district in 1912 there were 665 of communicable diseases, or 3 per 1,000. In the second, 286 cases, or 1.29 per 1,000 of population. From the foregoing, little computation is required to fix definitely in dollars and cents the higher value of life in the uncongested section.

It must be borne in mind that a house is not a mere place for shelter. It must provide that which will promote efficiency in labor and strength of character and citizenship. The house connotes the family; the family and not the individual is the unit of our civic structure. It should not be forgotten that any consideration of the employee that omits the family is largely wasted effort. It is now well recognized that in the modern factory, at least, the employee is in a better environment than in his own home. It seems the height of folly for industry to expend many times the per capita cost of health administration on the maintenance of healthful surroundings in the factory and permit the ostensible beneficiary to return to a home environment carrying the elements potent

with destruction to the individual worker, his children and posterity.

Under the head of communicable diseases, prevention, treatment and a simple discussion of antitoxins, vaccines, their manufacture and use, the length and importance of quarantine, etc., are considered. Venereal infections and their effects, heretofore shrouded in mystery and crime and not discussed with candor and intelligence, are discussed freely, as they have now come to be recognized as the most important of communicable diseases. This subject always enlists and holds the attention of an audience. It is amazing that the average individual knows so little or nothing of the remote effects of venereal infection.

Tuberculosis presents a wide and interesting field. Its relation to housing, over-crowding, food, hours of labor, fatigue, rest, sleep, etc., are pointed out.

In connection with child hygiene, in addition to the child itself, prenatal care, reference to obstetrics, obstetrical procedure and infant feeding are discussed. The value of the medical examination of children is emphasized. Industrial hygiene is intimately related to child hygiene, yet when children leave school and enter active life the health authorities lose sight of them. Industrial hygiene is an important feature in public health work and it is plainly the duty of some authority to supervise these young men and women during the early period of their industrial activity.

Under the heading of food and dairy inspection, the production, cooling, handling, shipping, storage and delivery of milk, together with the food value, the importance of bovine tuberculosis, the dangers of the insanitary market, and the handling of food in the home are referred to.

In connection with vital statistics, birth registration and its importance invariably attract attention.

The laboratory affords opportunity for simple discussion of culture taking and examination of diphtheria, typhoid, gon-

orrhea, syphilis, etc. These subjects always enlist the closest attention of an audience. A description of the examination of water and its importance is also interesting.

These and other health department activities, presented even with haste, hold the attention of an audience for half to three-quarters of an hour and bring forth questions indicating not a little grasp of the subjects discussed.

Supplementing the lectures, it is advisable to offer a motion picture show. Stereopticon and motion pictures appeal to shop employees and their families and large appreciative audiences are readily obtained either in the shop or at meetings under the management of employees associations which now exist among larger industries. Films are available from many sources. Our Government, in coöperation with other governments, together with educational and industrial institutions, maintains at Washington a Bureau of Commercial Economics, which has a large series of films on most of the subjects of personal and public welfare. The various state and municipal health departments and practically all of the state and national organizations for promoting health have series of pictures presenting strongly dramatic appeals on the subjects having their attention. The American Child Hygiene Association, the Social Hygiene Association, the National Tuberculosis Association, the American Medical Association, the National Housing Association, and others supply for a very modest cost sufficient material for a season of bi-weekly or monthly lectures.

A satisfactory series of lectures by the works' physician is difficult for the reason that most of our present-day industrial surgeons in small plants are part-time employees having neither the disposition, qualifications nor time to discuss community problems. Unfortunately again, the physician is trained to individualism, seeing only the case and not viewing disease in its community aspect.

His services are usually limited to advice to individual patients, and, if interested and conscientious, this service is, of course valuable and to him is due the highest credit for the discharge of this responsibility. The work is clearly desirable; but at what cost and how shall it be brought about?

In 1916, the National Industrial Conference Board surveyed 99 leading industries in an endeavor to ascertain the cost of health supervision in industry. It was disclosed that the cost incident to the care of 495,544 employees was \$1,238,485, or \$2.50 per capita. The budget of the New York Health Department is \$3,957,202.15, or in round figures, \$4,000,000. The population according to the Bureau of Census, July 1, 1918, is 5,872,143, or roundly, 6,000,000. Hence it is that the per capita expenditure is about 67 cents. The population of Cleveland in the same year was 810,306 and its Health Department expenditure slightly less than \$250,000, or somewhat over 30 cents per capita. This lack of expenditure does not include, however, the maintenance of hospitals. If industry sees its way clear to make an outlay of \$2.50 per employee, surely it is possible for the community to make a somewhat larger output and obtain returns wholly out of proportion to the sum expended by industry and that from the public funds.

It is clear, therefore, that there is an overlapping of effort with no inconsiderable waste of money. Experience has shown that there are three stages to the development of social movements, or economic reforms; a period of agitation,

a period of organization and a period of final incorporation of the desired orders of things. It is obviously the time for beginning an agitation having for its object the centralization of public health education and control in some centralized governmental authority. Industry is promoting the movement unconsciously, however. It is unfortunate that the present scope of the United States Public Health Service could not include the administration of compensation funds and other forms of social insurance likely to eventuate, which, in accord with the claims of their advocates will react to the prevention of disease.

It is perhaps more courageous than discreet to suggest that business in its present attitude toward government control, complete or partial, of social or economic function, pool its interest in a small group of the community with that of the community as a whole. Nevertheless, with the advantage demonstrated, executives are quick to respond to the demands of the period. It would seem entirely feasible to consolidate the function of compensation commissions and insurance boards to be created with that of national, state or municipal departments of health, or, if the principle of states' rights interferes, it would be workable to bring about coöperation between the agencies with the point of contact resting upon the state department, to the end that their respective functions be applied to a single or at least to correlated effort which would make its impress on the whole community in the better understanding of the purpose and value of preventive medicine.



**Are you thinking about the Fifteenth Annual Meeting of the A. P. H. A
in New York City, November 14-18, 1921?**

SOME ASPECTS OF POLLUTION AS AFFECTING OYSTER PROPAGATION

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If present conditions continue, the greater part of the eastern United States will be cradled in a septic tank, according to this author. The oyster, through its approaching extinction is an index of this increasing contamination. Protection is needed for the populations of the seaboard, and the welfare of those who seek the beaches for health and recreation.

Of all the products which come from nature's vast storehouse of food beneath the seas, none has received the attention of physicians and bacteriologists which has been given to the oyster. Living as it does close to large communities situated on tidewater, and obtaining its food by straining large volumes of water, the oyster may, when eaten raw, become an agency in the transmission of pathogenic bacteria from polluted waters to man. Some instances of typhoid fever in the past have been shown to have been due to eating oysters taken from highly polluted waters, but in other cases there has been an attempt to lay at the door of the oyster blame which rightly belonged on the shoulders of the community. Modern supervision by State and Federal health officials of the waters in which oysters are grown and floated has reduced the dangers of infection from this source to a minimum. Generally speaking, the oysters now obtainable on the market are as safe as our milk supplies.

It is not the relation of the oyster to disease which is to be considered here, but rather the effects upon the oyster and other living forms in our coastal

waters, of the waste substances now entering them. In this year of turmoil and unrest we are laying the blame for nearly everything unpleasant on the great war. It will, therefore, be no surprise to you to learn that even the lowly oyster, in its home beneath the waters, has borne its share and more of the destruction involved in this great struggle. The vast industrial expansion, since 1914, in regions close to the shellfish-bearing regions, together with lack of time or of inclination to work out methods of careful refining or proper disposal, has deluged our coastal waters with a flood of industrial wastes which is causing wholesale destruction.

In speaking of pollution in connection with shellfish we generally think of contamination by house sewage. As the effects of human wastes and of trade effluents upon a body of water are entirely different, they must very sharply be defined. Domestic sewage, as a rule, contains little or nothing which is toxic to aquatic organisms. It does contain large amounts of decomposable materials which when broken down yield, among other products, carbon dioxide and nitrates. The presence of these substances causes

a marked stimulation of growth of aquatic plants, mostly microscopic in size, which is followed by an increase in numbers, and often of size, of the animals which feed upon them.

The putrefactive and other bacteria which decompose the sewage and render it available as plant food, are aided in this process by a host of animal forms, all of which work together to bring about the ultimate oxidation of the wastes. Bacteria, plants, and animals together form a highly complex and interrelated group known to biologists and to sanitary engineers as the *biological machine*.

Under favorable conditions a small stream may dispose of the sewage of a relatively large population, and the stream in turn be supplied with a constant source of animal and plant nutriment. There is a true fertilizing action upon the water with a resultant large increase in the numbers of the organisms present. Since fish and shellfish utilize these plant and animal organisms as food, it follows that the addition of domestic sewage to a body of water will result ultimately in an increase in the amount of human food, in the form of fish and shellfish derived therefrom, as truly as though the sewage were employed in fertilizing land crops. Comparative biological surveys made on Lake Monoña, Wis., the Illinois River, and the Elbe in Germany, show that an enormous increase in the numbers of aquatic plants and animals follows the introduction of domestic sewage into a body of water.

Shellfish growing in waters contaminated with human wastes are usually very fat, not as is ordinarily supposed because they are eating sawage, but owing to the great number of food organisms which in turn are deriving their nutriment from the products of decomposition of the sewage. In the process of feeding in grossly polluted waters shellfish may take in typhoid bacilli, thus rendering them dangerous as human food until removed for a short time to uncon-

taminated waters, or otherwise purified.*

The nitrates and other salts essential for plant growth which are produced in the decomposition of sewage, and those which are brought to the streams by the leaching action of ground water upon the land, ultimately pass out to sea and are lost as a source of human food. Only as we utilize the coastal waters for the growing of fish and shellfish are we able to conserve and to transform into human food this continual loss of essential salts from the land. The oyster industry alone produces over \$15,000,000 worth of food every year, equivalent to more than 400,000 dressed steers.† Considered in this light, the oyster and other shellfish are true conservators.

The wastes from factories and manufacturing plants of all kinds present an entirely different problem. Here we are dealing with effluents which, though they may contain decomposable materials or some salts essential to plant growth, are in general highly toxic to aquatic organisms. The report of the Committee on Waterways Sanitation presented to the Sanitary Engineering Section of the American Public Health Association at this convention gives a tentative classification of industrial wastes into some 20 or more groups. For convenience we may divide these effluents roughly into the following four classes: (1) acid or alkaline wastes; (2) oil and oil wastes; (3) various chemical substances in solution, such as metallic compounds, dye-stuffs, and washings from many industrial processes; (4) precipitates held in suspension.

Natural waters are usually neutral or slightly alkaline in reaction. Experiments of limnologists and physiologists show that aquatic forms are extremely sensitive to changes in the hydrogen-ion concentration of the water. Even a very

*See Wells, W. F., "The Purification of Oysters as a Conservation Measure." Jour. A. P. H. A., April, 1920.

† Moore, H. F., "Oysters, a Little of Their History, and How to Cook Them." U. S. Bureau of Fisheries, Economic Circular No. 18, revised. Issued March 18, 1918.

slight degree of acidity will cause animals to leave a certain area, or will kill those which remain. Caustic soda and lime in high concentration as contained in the effluents from many industrial plants cause a heavy mortality among fishes and other animals.

Oil by spreading a film over the surface of the water, or by coating animals and plants with an impenetrable layer, ultimately kills them either by direct contact, or by preventing free interchange of oxygen and carbon dioxide. From the ease and the rapidity with which it is disseminated, and the small amount which is required to cover a large surface it is, gallon for gallon, one of the most destructive of the foreign substances entering our streams.

Dyestuffs, metallic compounds, and many other chemical substances are poisons with a high degree of toxicity. Even when highly-diluted these substances will kill nearly all living forms in a stream for miles below the point of entrance. Precipitates in suspension, such as the waste from pulp mills, canning factories and the like, may fall to the bottom soon after entering a stream and never reach the lower waters. In other cases these precipitates may be carried for long distances and in their decomposition exhaust all, or nearly all, of the stream's available oxygen, causing the suffocation of the animals therein.

The adult oyster, unable to move away, must take the water as it comes to it. Metals or dyestuffs, though present in very minute amounts, are accumulated by the mollusc until its flesh becomes highly colored and even unfit for human food. Analyses of green oysters taken from beds lying from five to ten miles from a copper refinery have shown as high as 20 milligrams of copper per oyster, over five times the normal copper content of the animal. Oil by destroying the organisms which form a large part of the oyster's food, and by reducing free oxidation eventually kills the bivalve indirectly, even though the oil itself never

comes in contact with the beds upon which the oyster lies. The oxidation of decomposable precipitates so far exhausts the available oxygen that the oyster may be suffocated.

But long before these effects of industrial wastes are felt by the adult oyster its young have been eliminated. The egg of the oyster develops within six hours after fertilization into a free swimming embryo which moves about in the water partly by its own efforts but chiefly through the action of currents. When one to two days old it develops a pair of tiny shells, between which is protruded the ciliated swimming organ, the velum. With the aid of the velum the little oyster larva ascends to the surface and may spend much time moving about just beneath the surface film. When about 0.32 of a millimeter in diameter it seeks out a shell, or other fixed object, and there attaches itself, to spend the remainder of its life on that spot.

During the free-swimming period, which lasts from 14 to 16 days in waters of the middle Atlantic coast, the larval oyster is exposed to many hazards from enemies, storms, or a sudden fall in temperature. It is extremely sensitive to unfavorable conditions, far more so than is the adult. As if its natural enemies were not enough, the larval oyster must now contend with industrial wastes, and the struggle can have but one ending. A film of oil on the surface of the water will kill molluscan larvæ within a few hours, owing largely to their habit of swimming close to the surface. The effect of other industrial wastes, as shown by Skinner and Sale in Bridgeport Harbor,* is to render the water unfit for the existence of oyster larvæ. The oyster grower depends for his seed upon the larvæ which survive the free-swimming stage and attach to his shells. A few years of successive failure to secure seed and his business is ruined.

Such is the condition now facing Con-

*Skinner, W. W. and Sale, J. W. Paper presented to American Chemical Society. Abstract in Science, N. S. Vol. LII, Sept. 17, 1920.

necticut, Rhode Island and New York, at one time three of the leading states in oyster production. For five years practically no oyster larvæ have set in New England waters. The industry there is now facing extinction. Scientific and practical testimony agree in attributing the chief cause of failure to the great outpouring of industrial wastes incident to the war. New Jersey, Delaware and Maryland, with oyster grounds further removed from industrial centers, have thus far suffered less. The end is inevitable, let present conditions continue, and in ten years the oyster in our northeastern states will be only a memory.

But why do I come to plead the oyster's cause to you, physicians and health officers? If the oyster alone were concerned we could afford to lose it in view of the value of our industrial products. I come to you because the study of conditions in our coastal waters shows clearly the approach of a national calamity. The industrial wastes which kill the oyster larvæ at the same time destroy the biological machine which normally takes care of the self purification of our streams and coastal waters. The stream which a few years ago disposed of large volumes of sewage can now no longer do so, with the result that the banks are strewn with heaps of putrid fecal matter. During the warm months these accumulated masses swarm with flies, adding to the dangers of the situation.

As the poisonous effects of industrial wastes extend further and further downstream the area of bacterial contamination is by so much increased. Pollution has passed far beyond its former bounds and now is invading the bathing beaches and the shellfish-bearing areas which a few years ago were miles from any

source of contamination. Evidence from many sources shows that pollution is progressing rapidly down nearly all of our large streams. Unless present conditions are remedied there can be but one result: in 10 to 15 years the greater part of the eastern United States will be cradled in a septic tank.

The disposal of industrial wastes in such a way as to render the effluents harmless when emptied into a stream, and still not impose an undue tax upon the industries concerned, presents a problem which will require the best efforts of chemists and engineers for years to come. As yet we have made scarcely a beginning, but when we consider what the preservation of the natural purity of our waters means to us and will mean to posterity in the future, it is evident that relief from present conditions must be sought without delay.

To this end physicians, health officers, engineers, biologists, fishermen, oyster growers, and hotel keepers and property owners of our summer resorts, must unite in the endeavor to work out a rational solution of the problem. In many instances highly poisonous substances are being thrown into streams merely as the result of carelessness on the part of the offenders and the indifference of the general public. The rapidly increasing population and the industrial expansion of the northeastern part of our country close to the Atlantic seaboard, present a very serious problem. To protect the health of the thousands which flock each summer to the resorts on the coast, as well as to maintain the purity of the water of the shellfish-bearing areas, the flood of poisonous industrial wastes now entering the coastal waters must be curtailed and the natural purity of these waters thereby restored.

INFANT MORTALITY IN DETROIT

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Read before the Vital Statistics Section, American Public Health Association, at San Francisco, Cal.,
September 15, 1920.

One-fourth of all deaths are among children of less than one year. Babies succumb in large part to causes acting before birth. To prevent such deaths, increasing attention must be paid to prenatal work. Lowest mortality is found among Russian Jews and Italians. Race stocks most in need of prenatal attention are Negroes, Poles, Austrians and native whites.

IN 1906 Detroit's infant mortality rate was 213. Last year our rate was 96.7. This is a substantial and welcome decline.

We find, however, upon inquiry of various large cities that there are some rates lower even than our own.

TABLE I.
INFANT MORTALITY RATE IN U. S. CITIES 1919.
(Deaths Under 1 Year per 1,000 Births,
Exclusive of Stillbirths)

Position	City	Rate
1	Pittsburgh	115.
2	Jersey City	102.
3	Milwaukee	97.6
4	Baltimore	97.2
5	DETROIT	96.7
6	Boston	96.6
7	Cleveland	92.5
8	Chicago	90.6
9	Philadelphia	89.8
10	Washington	85.4
11	New York	81.6
12	Cincinnati	79.7
13	Newark	76.2
14	St. Louis	75.3

In fact in 1919 among 14 cities there are nine with lower rates than Detroit.

This circumstance naturally piques local pride and there is an instinctive curiosity to find out why some cities are lower than others. The present paper is an analysis of the factors responsible for infant mortality in Detroit during the year 1919.

Sectional Variations in Infant Mortality Rate.—For purposes of study the city is divided into about 200 small

areas or zones. While the rate for the city at large is 96.7, there is great variation in the rates of individual zones. Thus of 138 zones in which there occurred 20 or more births, the infant mortality rates were grouped as follows:

TABLE II.		Number	Per Cent
Infant Mortality Rates from—	Zones in Each Group	of Zones	
0- 49	16	11.6	
50- 99	63	45.6	
100-149	47	34.1	
150-199	10	7.3	
200 and over	2	1.4	

The highest rate for any zone is 216, the lowest 15.1.

Areas of low and high mortality are scattered over the city. They are not segregated by themselves. In general the west side of the city has a lower infant mortality than the east side. There is also an area of high infant mortality in the northeast section surrounding the village of Hamtramck.

Congestion.—What is there about these zones of high mortality that differentiates them from other districts? Detroit has grown rapidly in recent years and there is much overcrowding. Are the areas of high infant mortality more congested than others?

The ten zones with highest infant

mortality, all above 150, have a baby population per square mile ranging from 96 to 1380, and averaging around 400. We lack population figures to express congestion in total people per square mile.

There are numerous other areas with a still greater baby concentration and yet the mortality is far below 150. Ward 3, Zone 200, for instance, has 2750 babies per square mile and an infant mortality of 81.3.

TABLE III.

Ward	Zone	Babies per Square Mile	Infant Mortality Rate
3	200	2,750	81.3
5	300	2,000	96.7
5	400	1,250	98.7
11	300	1,550	116.
14	300	1,030	57.

A district does not necessarily have a high infant mortality rate merely because it is congested.

As the congested sections are for the most part occupied by people of foreign birth, we may eliminate this influence by observing the effect of congestion in zones 80% or more native born.

TABLE IV.

Ward	Zone	Babies per Square Mile	Infant Mortality Rate
4	200	1,080	98.0
17-C	200	883	52.9
8	200	881	87.3
17-D	200	818	67.0
8	500	807	28.9
8	300	748	70.1
16	100	722	125.
15	400	481	99.6

Ward 8, Zone 500, has 807 babies per square mile and an infant mortality of only 28.9. Ward 16, Zone 100 has 722 babies per square mile and an infant mortality of 125.

It is evident therefore that even in districts largely native American, other factors as well as congestion influence the baby death rate.

Economic Status.—In growing, Detroit has witnessed some of the newer sections become more congested than

the older districts. The newer districts attract people of better economic status.

Areas of equivalent congestion frequently are quite different as measured by the material resources of the residents.

We can measure these two factors independently by the mortality rates in certain wards and zones predominatingly native-born white. We have no specific nor exact index of economic status, but it is known from general observation that the economic situation improves as we go from the downtown districts northward in the 2nd, 4th, 6th, 10th and 12th wards. In Table V are given the figures for baby concentration and infant mortality.

As the economic situation improves the infant mortality becomes consistently less. In a general way the baby concentration likewise lessens, but not in the same proportion.

We may say then that an increase in the material assets of the family is conducive to a lowered infant mortality and that this influence is somewhat independent of the degree of congestion.

TABLE V.

Zones	Babies per Square Mile	Infant Mortality
	502	120.
100	607	90.6
200	483	84.0
300	398	74.2
400	378	32.8

Racial Stock Characteristics.—Passing from a consideration of environmental influences, we may examine the characteristics of each race stock with respect to the baby death rate. It will be recalled from Table II that 16 zones had infant mortality rates less than 50. There were 12 zones with rates 150 and over.

Nine of the 16 good zones are peopled mainly by native-born white. Only one of the 12 bad zones is native-white. One may infer from this that

it is the foreign-born who are responsible for our high infant death rate.

On examining the question more carefully we shall find it necessary to differentiate among the foreign born. All foreign groups do not have high death rates. In fact there are five racial groups with lower rates than the native white. The native white rate is 95, slightly below that for the city as a whole. Those with lower rates are Germany 92, Denmark, Norway and Sweden 88, Great Britain 87, Italy 85, and Russia 64.

At the top of the list (Table VI, Chart I) stands the negro with a rate of 151. This is followed by Greece with 149. Austria, Hungary and Bohemia have a rate of 119, Turkey and Syria 112, Poland 111, Belgium and Holland 111, France 109, Canada 102, and all other countries 107.

TABLE VI.

Infant Mortality by Nativity of Mothers—
Detroit, 1919.

Nativity	Births	Deaths under 1 year	Rate
Negroes (mostly U. S.)	587	89	151.
Greece	101	15	149.
Austria, Hungary and Bohemia	2,078	247	119.
Turkey and Syria	170	19	112.
Poland	2,598	289	111.
Belgium and Holland	225	25	111.
France	46	5	109.
Other Countries	589	63	107.
Canada	1,326	135	102.
United States (white)	12,915	1,222	95.
Germany	703	65	92.
Denmark—Norway— Sweden	125	11	88.
Great Britain	747	65	87.
Italy	1,155	98	85.
Russia	1,615	104	64.

We have been searching for the cause of Detroit's relatively high rate. Apparently the foreign-born were to blame, but from Table VI it is evident that the native white are as much to blame as any one. This group accounts for over 50% of the babies and its rate of 95 is the determining factor in the city rate of 96.7. The rate for the entire foreign-born group is ap-

proximately 98.4, or but slightly above the native rate. Concentration of corrective efforts among the foreign-born will not materially lower the city's rate. The native rate must also be reduced in order to give Detroit a more favorable position among the cities of the country.

Incidentally it may be noted that the standing of the race groups as found in Detroit confirms, in the main, the experience elsewhere. Thus the 1917 report for the U. S. Birth Registration Area shows Poland with a rate of 172.6, Negro 148.6, United States 93.8, Denmark, Norway and Sweden 66.2.*

Baker and Sobel† give the negro rate for 1919 in New York City as 151, the white rate 79.6. It is also remarked that the Jewish population, presumable mostly Russian, has a very low rate.

Davis‡ describing the situation in Boston in 1911 gives the following rates according to the nativity of the mother:

United States	149
Canada	133
Ireland	123
Italy	108
Russia and Poland	93

There is general agreement in this country as indicated by these reports as to the relatively low baby death rate among Russian Jewish mothers and Italian mothers and a relatively high rate among the negro and native white.

What is there in the racial habits of these various groups which so influences the baby death rate?

At first we are tempted to question whether the accuracy of reporting births is equal among all groups. In the Delray District of Detroit where birth reporting is surely as good or better than in other foreign sections, the mortality rates of Poles and Hun-

*Public Health Reports, June 27, 1919.

†Monthly Bulletin of Dept. of Health of N. Y. City, June, 1920.

‡American Journal of Public Health, February, 1912.

CHART I.

garians are about the same as those for the entire race group in the city. Birth reporting among the native-born white and colored may be open to slight error, but hardly sufficient to affect the rates materially.

Causes of Death.—To the specific causes of death we may turn for possible enlightenment. In Table VII are given the infant mortality rates for the six race groups about which interest centers, the native white, the negro, Russian, Italian, Austrian, Hungarian, and Bohemian, and Polish. Rates are given for the four principal causes of death, viz:—general diseases (including the acute infectious diseases, also venereal diseases and tuberculosis); respiratory diseases (including the pneumonias and bronchitis); digestive diseases; and diseases of early infancy (chiefly premature birth and congenital debility). These figures are most instructive.

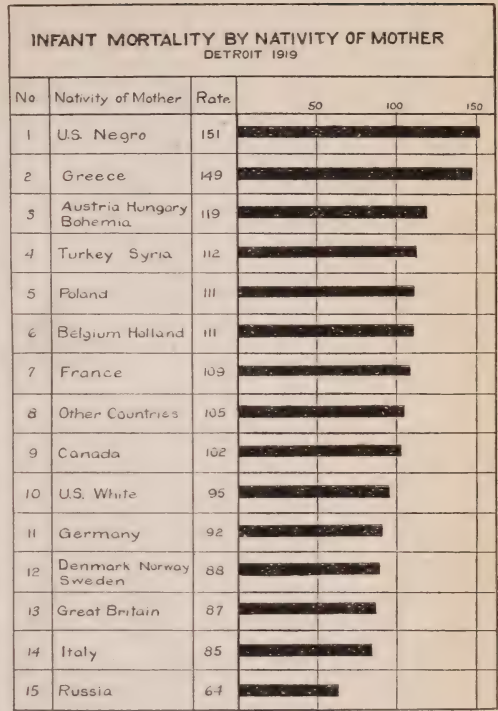


TABLE VII.

Infant Mortality by Cause Among Race Stocks, Detroit, 1919.
Deaths Under 1 Year from Each Cause per 1,000 Births.

Nativity of Mother	Cause of Death			
	General Diseases	Respiratory Diseases	Digestive Diseases	Diseases of Early Infancy Including Malformation
Native Born (white)	11.2	13.9	21.4	42.1
Negro	22.2	44.3	25.6	49.3
Russian	10.5	11.8	21.0	19.8
Italian	13.0	30.3	19.9	19.0
Austrian, Hungarian, Bohemian	12.5	29.4	32.8	40.1
Polish	11.9	20.0	33.4	40.0

It has been our experience in Detroit, and this has been confirmed in other cities, that the Russian mother, particularly the Russian Jewish mother, and most of our Russians belong to this group, are thorough believers in breast feeding. The Italian infant is likewise, although to a lesser degree, breast fed. Breast feeding is less rigidly followed among the Austrians and Poles.

Methods of feeding would, therefore, help to explain the difference between

the Russians and Italians on the one hand with few baby deaths from digestive disorders and the Polish and Austrian groups on the other hand with their high death rate from these causes.

But the Russian and Italian rates from digestive disorders are not appreciably lower than the native white. The greater frequency of breast feeding among Russian and Italian does not reduce their rate below that of the native

white where breast feeding is relatively less common.

The relation of the races in deaths from respiratory diseases is suggestive at least of a climatic influence. The negro and the Italian, used to warm climates, have the highest rates for respiratory disease. The Russian and the native white are accustomed to cold climates and their rates from respiratory disease are low. The other two occupy an intermediate position as to climate and also in the mortality rate.

Deaths from general diseases are similar for all races except the negro. The negro group has a rate of 22, against an approximate average for the other groups of 12. The deaths from each specific disease are too few in number to warrant generalizations, but there is an indication at least that venereal disease is a prominent cause of deaths among negro babies.

The diseases of early infancy show a wide variation among the race groups. The negro rate is the highest (49.3), and next in a group by themselves are the native white, Austrians and Poles with a rate around 40. Distinctly apart from these are the Russians and Italians with the low rates of 19.8 and 19.0.

Baker and Sobel mention the low rate from congenital causes among Italians and Russians.

It is not easy to find a comprehensive and satisfactory explanation for the above arrangement of the race stocks. There are several bits of contributory information which can be offered. In the first place illegitimacy is more prominent among the negro, and native white.

We know that illegitimacy increases the mortality rate. This would account in a way for the higher negro and native-white rates in deaths from early infancy.

TABLE VIII

Nativity of Mother	Total Births	No. Illegitimate Births	Percent Illegitimate
Negro	587	29	4.9
Native White	12,915	379	2.9
Austria, Hungary and Bohemia	2,078	13	0.6
Poland	2,598	10	0.4
Russia	1,615	3	0.2
Italy	1,155	2	0.2

From observations of our medical and nursing staffs, it appears that the Russian and Italian are distinctly home women. There is less factory employment among them, and the mother is permitted to care for herself better prior to and following the birth of the baby than the Austrian and Polish mother. This circumstance undoubtedly influences the situation materially.

Another fact that has a bearing on this matter is the reaction of the race groups to efforts of public and private health agencies. The Russian and Italian mothers are interested in the field nursing service and are willing attendants at the clinics. Much missionary health work has been carried on among them. More recently the negroes are recognizing the value of this work and are flocking to the clinics in ever increasing number. In the Austrian and Polish sections the nursing service advances more slowly.

Administrative Policy With Reference to the Reduction of Infant Mortality.—There are certain outstanding features in this statistical analysis which suggest lines of administrative procedure looking toward an improvement in our baby death rate.

From 40 to 50% of deaths under one year occur during the first month of life. To lower this toll it is necessary to put forward a vigorous pre-natal program and the native white needs this service fully as much as any other group. Thus 44% of all baby deaths among the native white are due to the so-called diseases of early infancy.

Corresponding percentages for the Pole are 36, Austrians, Hungarians and Bohemians 34, Negro 33, Russian 31, and Italian 22.

It is then humanly possible to cut down these deaths in early infancy as the Russian and Italian experience proves. The results of our pre-natal work in Detroit also indicate what it is possible to accomplish. Catering to people in the less well-to-do sections of the city and among whom unfavorable complications were only too frequent it was possible during 1919 and 1920 to keep the infant mortality rate down to 78. By extending the privileges of physical examination and advice to the prospective mother it is felt that many unnecessary deaths among babies during the first month of existence may be avoided.

We may also perceive from this analysis the special need for post-natal work, such as education in baby care and feeding, among the negro and the peoples hailing from southeastern Europe.

There is no intention of discouraging the splendid efforts that are being made by health agencies to keep babies alive after the first month. We do feel, however, that pre-natal conduct is much less well appreciated than post-natal and for this reason there is greater promise of reward in pursuing this line of work. The difference between Russian, Italian, native white and negro in baby deaths from digestive diseases is very slight. It is the Southeastern European groups that need instruction in this subject.

On the other hand the Italian and Russian have just half the baby deaths from congenital and allied causes that the native-white, negro, Austrian and Polish groups do.

To correct this condition a program of pre-natal instruction is called for.

There are innumerable worthy uses for public moneys. One of the purposes of this review is to reveal lines of procedure in which public health funds may be invested most effectively in reducing the toll of infant deaths.



An Open Letter to a Sanatorium Patient.

—Realizing how much depends upon the tuberculous patient himself as to his progress when in a sanatorium, Dr. Sidney Barwise, M.O.H. for Derbyshire, hands each entrant of the Derbyshire Sanatorium the following open letter, which is reprinted in his annual report. As a model of what such a document should be, we give it in full: "Once infected with the tubercle bacillus, the germ is in your body for the rest of your life, a 'traitor in the camp,' waiting to take advantage of any abuse of the laws of health or any indiscretion. Your sojourn in the sanatorium is to enable you to break with habits of the past, such as late hours, insufficient sleep, lack of scrupulous cleanliness of home or person, insufficient fresh air, polluted atmosphere, as in music halls or cinemas, apart from the more obvious evils of over-smoking and alcoholic excess.

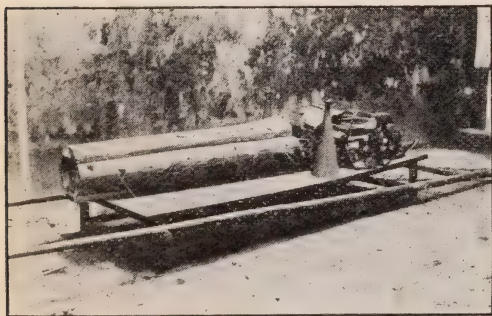
Your stay in the sanatorium is to enable you to build up your strength by living an open-air life, so that when you return to your home you will be strong enough to live with the windows open day and night, and will feel repelled by a close atmosphere. You will be enabled to feel the benefit of breathing cold air, which diminishes the risk of hemorrhage from the lungs, and you will learn how your sputum, which may contain the tubercle bacillus, should be disposed of so that it may not re-infect yourself or infect others. The treatment of consumption is a serious business. You do not go to the sanatorium for a good time, but to learn how to cure yourself. When you return to your home you must continue to practice all you have learned in the sanatorium, and must relax no precaution and neglect no instruction given."—*Medical Officer*, Feb. 12, 1921, 77. (D. G.)

CHOLERA PREVENTION CAMPAIGN IN FOOCHOW

A LATE WORK OF DR. W. W. PETER

Americans have achieved a splendid work in bringing into China the principles and practices of the Western medical world. Hospitals and schools have been the results with a long train of successful efforts of the medical missionaries. Public health work in the Western world has turned more and more towards the securing of results through health education of the people, and five or six years ago Dr. W. W. Peter began his remarkable popular work among the Chinese in this line. Aided by the National Medical Association, the Chinese Medical Missionary Association and the Y. M. C. A., the earlier educational campaigns were instituted, the story of which has been published in the JOURNAL (October, 1919, pp. 743-749).

FIGURE 1



Firewood (to boil the drinking water) is better than coffin wood.

Since that time, Dr. Peter has visited two other continents before returning to his work with these people. He spent a number of months in the United States in special studies in sanitation and public health, and afterwards aided in the war work in Europe, giving very essential assistance in the management of a great hospital camp of Chinese coolies. The officers had experienced some difficul-

ties in handling these foreigners, who had come to the country to aid the British, but Dr. Peter knew them and their ways and was able to adjust some of the difficulties.

About eighteen months ago, Dr. Peter returned to China, and from his office there has come to the JOURNAL an outline of the Foochow anti-cholera campaign. The story has been somewhat delayed on account of lack of illustrations, but these have recently been supplied through the courtesy of the International Committee of Young Men's Christian Associations. Cholera caused about 200,000 deaths in China in 1919 and it is well worth the attention of the Western world not only from the humanitarian point of view, but as a measure of self-protection. From endemic centers like these the disease spreads to other countries and its cost even to the United States in money necessary to keep watch of it by our quarantine is quite large in amount. Fighting this and other diseases at the source is the modern development of health administration, and thanks to the active agencies noted and the Red Cross, important preventive measures have been set on foot in the Orient.

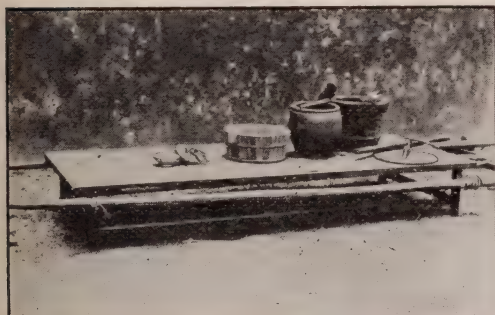
Cholera is a disease of the seasons, dying down when cold weather sets in. The campaign, therefore, was carried on in the middle of last June, with the intention of repeating the spectacle with its educational value whenever necessary.

The previous work in health education in China has been at definite central points. A hall was secured with its exhibition and its explainers, and admission required a ticket. At this time, however, in fighting a disease in one of its strongholds, Dr. Peter real-

ized the need of what he called "hard street fighting," in which if necessary every street in a town would be visited and practically every threshold. For a large place this program was ambitious, and in Foochow he called in his plans for at least a thousand volunteer workers who should be practically free to participate in the parades.

The administration of this campaign was really very complicated and various branches of service were established to include finance, recruits, police, equipment, advertising, women's auxiliary, investigation, halls, ushers, "movie" show and lantern slide meetings, together with some items like relief for the poor.

FIGURE 2



Dish washing, the wrong way.

In his arrangement with Foochow, which was to finance the movement locally, Dr. Peter impressed on the local committee the fact that if the entire health exhibit from Shanghai were desired it would be necessary to provide transportation accommodations for four tons, which for the boat would mean 13 cubic feet. To the credit of the Chinese city, Foochow requisitioned the complete outfit.

Such a movement does not come to China as a novelty, and in fact the Chinese are quite ready to listen to health lectures. This was evidenced by the fact that especial pains were taken during the Foochow campaign

to notify the police and work them into the program. On a previous occa-

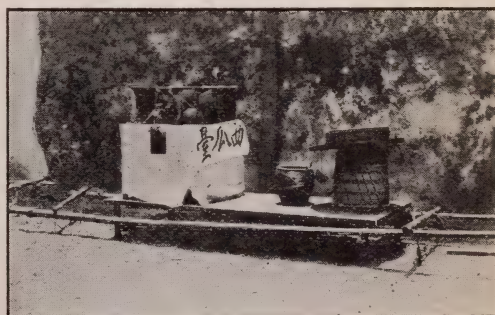
FIGURE 3



The banners are inscribed, "Campaign against flies in Foochow."

sion at Changsa-hunan, the health lecturers neglected to ask for a police detail and the result was that the evening lectures were abandoned on account of the vast crowds, and a number of persons were even injured in the streets because these were crowded by the multitudes wishing to witness the show. In the Foochow campaign the great attention-compelling feature was the parade. First came the governor's military band. This gave recognition to the official, and showed that he was in line with modern progress. Then there were details of civil and military police, and following them were a number of figures such as we see in this country only

FIGURE 4



The inscription on the table is, "(Correct) outfit for selling watermelons."

in Mardi Gras festivals or costume parties, all of them focused on the subject of cholera.

The principal of these figures was that of cholera itself, an expert on stilts, mounted as high as the street signs or wires permitted, with a large movable head and jaw, electric light eyes for night use, and hands that could be controlled by the walker. As he walked along he pointed to the various cholera-predisposing factors in the streets by inclining his head, looking at them, or pointing to them. Following him came half a dozen announcers with megaphones. These were after the pattern of American college student "rooters," well trained, and in the command of a leader who gave them the cues. "Behold, there is cholera! Last year cholera caused twenty thousand deaths!" Then they point to the crowd at the street edge. "Do you know! Do you know! Then listen?" Hands are raised in unison and they point together to some nuisance. Then they walk for a distance in dramatic silence. "Salvation is at hand," comes the lusty chorus. "Hear us, O men and women!" Then there is silence; then the grand burst of voices: "But Foochow can be saved! Victory lies within its grasp! But everyone of you must fight for his safety!" One may readily realize the effect of

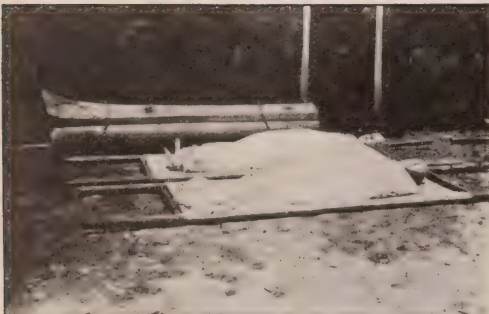
such appeals upon the imaginative dispositions of Orientals.

The procession had in it many floats. These floats, however, are of Chinese pattern, a platform borne by men, little tables, indeed, furnished with bearing poles, on which were displayed the items to be shown and interspersed between them were the megaphone bands emphasizing the points illustrated by the floats. Coffin wood or fire wood (Figure 1), is one of these, a float on which the megaphones of the bearers may be seen. The moral of this which they pointed out is that it is better to use fire wood to boil your water and thus avoid cholera than to be stricken by the water-borne disease and ensconced in the coffin wood.

Then might come the float on the care of dishes and household utensils. (Figure 2.) It is a very simple house-keeping outfit. The garbage pail to the right has its cover removed, the water jar next to it, with the curious dipper lying on its top is also uncovered, while there is a rude wooden receptacle and to the left some dishes. Great flies are present, one of them on the edge of the garbage pail and the other inspecting one of the dishes, showing the danger of infection through insects. The flies for this work were made with walnuts for bodies and wings inches in length, but they were pigmies compared with the flies and other insects carried elsewhere in the parade (Figure 3), with banners bearing the legend, "Campaign Against Flies, in Foochow." The legends and the megaphone men gave point to this feature.

A float (Figure 4) labeled, "Outfit for selling watermelons," was a lesson in the protection of foodstuffs from contamination, another float not here presented showed the wrong way with great flies crawling over the luscious fruit. Floats of this kind were considerable in number, dish washing,

FIGURE 5



Models of cholera victims, with coffins.

right and wrong; the table set for the meal, right and wrong; and food selling, right and wrong, with flies in evidence in all the wrong methods, emphasizing the lesson, that flies can convey cholera.

Unpermissible for public exhibition in this country, but meaning much to the Chinese, were the stretchers bearing models of victims dead from cholera. These figures were especially made to exhibit the drawn features of those who die from this disease, and were borne in the procession (Figure 5), together with their crude wooden coffins.

Two of the masked individuals from the parade are shown in Figure 6, Mr. Cholera Victim and Mr. Wiseman, the former emaciated and ill, the latter, well nourished and jolly. Banners

FIGURE 6



Mr. Cholera Victim and Mr. Wiseman.

FIGURE 7



The legend reads, "Inoculation against Cholera, Chinese Y. M. C. A., 1919, under Dr. Peters' Health Campaign Work."

with inscriptions, groups with the floats, and with the insects, were interspersed between bands of music and the vociferating students yelling forth megaphonically their health lessons.

Cholera comes upon the Chinese usually in June. In 1919 it made its appearance and became unusually violent, the people flocked to the temples with incense and paper money. In their extremity they even carried their usually neglected idols through the streets, hoping that these gods would stay the plague. Even intelligent citizens, who normally disbelieved in the idols were caught in the popular hysteria and gave money to the idol bearers. There were others, however, who realized the real facts, so that when the plan was made to have the anti-cholera campaign in Foochow, there was sufficient financial backing.

There were some sharp corners turned in that health campaign according to Dr. Peter in his letters. There was a personal attack on one of the officials by anarchistic individuals,

who sought to secure his death by blowing him up, but this failed. Then after the campaign had really opened there were leaders who called a strike among the half hundred students who were such important factors to the parade. There was an intention to use the occasion for the distribution of semi-political propaganda, and when this was denied, there was trouble. The Association leaders were fortunate, however, in having built up strong friendships among the students, and these as a body elected to desert their old leaders and render this service to society.

Despite some unfortunate conditions of weather there were held 285 meetings with no less than 2,380 volunteer workers, with record audiences, and some 300,000 pieces of cholera literature were distributed. Groups of the people assembled as in Figure 7 for inoculation and other measures were put into force. The result is one of which Dr. Peter and his associates may well feel proud. Up to the close of the season of last year, there was no cholera in Foochow. R.



Mortality Rates of College Women.—A study of the death rate of college women shows that it is less than one-third the estimated death rate of women of the same age group in the registration area. This result was obtained by collecting data on 15,561 college women, representing all the alumnae of Vassar, Smith and Wesslesley and aggregating 204,558 years of life. The general death rate was found to be 3.24 per 1,000 for the period of life included, 20 to 64 years. This was compared with rates of women in the U. S. registration area and found to be lower in every age group. The estimated general rate for women of the registration area is about 10 per 1,000 for the 20 to 64 years group. The figures were also compared with the results of a study of New York City school teachers in 1916 and found to be very much in accordance with them. These teachers had been found to

have the lowest rates of any New York City employees.

These results are most significant in that they show what can be accomplished in reducing the death rate among those who have certain advantages of living. If the same favorable conditions that college women enjoy could be applied to other classes, the mortality rates would undoubtedly be lower.—M. M. Hulat Quarterly Pub. Am. Statistical Asso., March, 1921.—(J. A. T.)



Comparison of the Wassermann and Sachs-Georgi Reactions in the Serologic Diagnosis of Syphilis.—A diagnosis of syphilis, or a conclusion as to treatment, cannot be based on the results of a Sachs-Georgi test with safety, and the reaction is not suitable for general use for this purpose.—Robert A. Kilduffe, *Arc. Derm. Syph.*, 3, 415 (1921).

PHENOL COEFFICIENTS

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The author states that a phenol coefficient indicates relative germicidal efficiency under laboratory conditions only, and has no practical value. Users of disinfectants ordinarily "follow directions," and employ the dilutions recommended by the manufacturers. This author suggests that we make certain that the recommended dilutions are efficient, and cast aside the coefficient.

THE standardization of disinfectants by means of a carbolic acid coefficient, or phenol coefficient as it is more commonly called nowadays, was originally proposed by Rideal and Walker in 1903. At the time when they published their original article in the *Journal of the Royal Sanitary Institute*⁹ a considerable amount of information regarding disinfectants had been made available by the work of many investigators. But the methods used varied so much and so little attention had been paid to establishing standard conditions that it was difficult to compare the results obtained. So, in order to facilitate such comparison, Rideal and Walker devised a method of standardization in which disinfectants are tested alongside of carbolic acid under certain specified conditions, and their relative germicidal values estimated in terms of carbolic acid.

This method was investigated by the Disinfectant Standardization Committee of the Royal Sanitary Institute and in 1906 was recommended by them "for general purposes of standardization."¹¹ Since then the method has been improved in various ways until now we have the much more exact and accurate method described by Rideal and Walker in 1913 in their article published in the *American Journal of Public Health*.¹⁰

Although many workers have been

able to obtain good results with the R-W method many others, both in England and in this country, have found difficulty in obtaining satisfactory results. Much of this difficulty has been due to failure to observe strictly the standard conditions of the test, and in this country much additional difficulty has been caused by uncertainty in regard to the official standing of the technique described by Partridge⁸ in 1907.

On account of the difficulties experienced with the R-W method the Lancet Commissioners devised a method called the Lancet method, which is described in detail in their report published in the *Lancet*⁶ in 1909.

In 1911 Anderson and McClintic, working in this country, brought out a method based on the Lancet method, which they designated the "Hygienic Laboratory" method. This method is described in their original article published in the *Journal of Infectious Diseases*¹ and also in *Hygienic Laboratory Bulletin* 82.²

The H-L method was investigated by the Disinfectant Standardization Committee of the Laboratory Section of the A. P. H. A. and adopted as an official method, with some modifications made by the Committee. This modified method is described in their report published in the *American Journal of Public Health*³ in 1912.

The latest phenol coefficient method is that recently devised by another Disinfectant Standardization Committee of the Laboratory Section of the A. P. H. A., the full details of which are given in their report published in July, 1918, in the *American Journal of Public Health*.⁴

The method is based on the H-L method as adopted by the previous A. P. H. A. Committee but a number of modifications have been made. The most important change is the use of an unadjusted culture medium. J. H. Wright made a special study of this matter and the full details of his work are reported in his article published in the *Journal of Bacteriology*.¹⁶ Attention will be given here only to the significance of the change from media adjusted in the usual way to the unadjusted culture medium, as shown by the work of the Committee.

In 1915 a comparative test was made whereby 5 different laboratories undertook to test two special disinfectants by both the R-W and H-L methods, using first the ordinary procedure then in vogue in each laboratory, and second the two methods exactly in accordance with the published technique, using the same strain of typhoid bacillus and the same sample of synthetic phenol for all the laboratories.

In regard to the results, the Committee's report states that the average deviation from the mean with one disinfectant (having a coefficient of about 5), was 10% for the H-L method and 18% for the R-W method, while with the other disinfectant (having a coefficient of about 15) the deviations were 6¼%, for the H-L method and 14% for the R-W method.

As a member of the Committee the writer had occasion to note also the extent of the extreme variations and as these are rather striking they will be mentioned briefly. Using the H-L method with standard technique, the same strain of typhoid bacillus and the same syn-

thetic phenol, coefficients obtained by different laboratories varied from 4.0 and 11.8 respectively, up to 5.4 and 14.8. Using the R-W method in like manner, with standard technique, the same strain of typhoid bacillus and same phenol, one laboratory reported the coefficients of the two disinfectants as 3.3 and 11.00, while another laboratory reported coefficients of 7.0 and 20.0.

In 1916 another comparative test was made, using the R-W and H-L methods with standard technique in all respects, except for the use of the unadjusted culture medium. The difference in results was most marked; the average deviation from the mean in all H-L tests was 6¾% and in all R-W tests 4.6%. The extreme variations of coefficients for the low coefficient disinfectant were from 3.8 to 4.4 by the H-L method and from 3.8 to 4 by the R-W method. For the high coefficient disinfectant the variations were from 12.2 to 14.8 by the H-L method and from 11.1 to 13 by the R-W method.

In view of the results obtained in this second comparative test and the results of Wright's investigations, the Committee adopted the unadjusted culture medium and recommended that its H-ion concentration be determined by the colorimetric method of Clark and Lubs. The most favorable pH is 6.5, but the medium may be used with the pH anywhere between 6.0 and 7.0.

In connection with the Committee's consideration of the results of the second comparative test, Wright called attention to some work which he had been doing which indicated that the really important factor to be considered is not so much the H-ion concentration of the original culture medium as the H-ion concentration of the typhoid cultures used in making the tests. He stated that the coefficient obtained seemed to depend on the length of time the organism had been subjected to any given H-ion concentration. When a typhoid culture is carried along by successive

daily transfers from one broth to another, which is the method followed in all standard methods, the H-ion concentration of the cultures varies with the number of daily transfers that have been made in any particular medium.

Wright found that, for example, with H-L broth having an initial pH of about 5.2 the first one or two daily transfers will show a pH of 4.9 or 5. As the number of transfers is increased the pH increases gradually up to about pH 6.2, after which it remains very constant, this point being reached in from seven to eight days. With Witte's peptone in unadjusted media he found that the pH became uniform in from 4 to 5 days at about pH 6.8 and with Armour's peptone becomes uniform in about 7 to 8 days at approximately pH 7.2. As far as coefficient tests were concerned he stated that the most uniform results were obtained only after the test cultures have been transferred a sufficient number of times to attain the final comparatively uniform H-ion concentration.

The writer has recently made some experiments along this line, the results of which will be mentioned briefly. In the first place, cultures of *B. typhosus* in an unadjusted culture medium made with Armour's peptone if left undisturbed grow steadily more alkaline. For example, in one experiment with four different strains of *B. typhosus* in an unadjusted medium whose pH was 6.7, the pH of the four cultures after three weeks growth was as follows: 9.0, 8.8, 8.8. and 8.3.

On the other hand, where a typhoid culture was carried along in this same culture medium by successive daily transfers, the pH of the cultures after ten transfers remained constant at approximately 7.0.

In another experiment, using an unadjusted culture medium containing more Liebig's extract, the pH of which was 6.3, the pH of four typhoid cultures after 17 successive transfers was as follows: 6.3, 6.1, 6.2 and 6.2. And in a

similar experiment with R-W standard broth made with Witte's peptone, the initial pH being 7.3, the pH of the typhoid culture after 14 transfers was 7.1.

In using these cultures in making coefficient tests there were noted perceptible changes in the resistance of the cultures to phenol coincident with changes in the H-ion concentration and uniform resistance when the H-ion concentration remains unchanged.

And now let us ask ourselves "What is the real value of a phenol coefficient as determined under present conditions?" In answer I should say that at the present time a coefficient has no practical value whatever, except as a means of preventing the use of positively worthless preparations and as an aid to the disinfectant manufacturer in maintaining the uniformity of his product.

In the first place, on account of the multiplicity of "standard" methods, any given disinfectant will have as many coefficients as there are methods, and on account of modifications which have been made in the R-W and H-L methods the number of possible coefficients is even greater. The R-W method as now used in England⁷ differs from the method as used in this country and the H-L method as now used at the Hygienic Laboratory¹⁴ differs from that described in Bulletin 82. Indeed, lacking any authoritative definition of what "R-W" and "H-L" mean any one is at liberty to use any one of several different forms of these methods and say that the resulting coefficient was obtained by the R-W method, or H-L method.

A much more serious source of trouble is found in the fact that all of these standard methods, except the R-W method now used in England, specify the use of Witte's peptone. As we all know, Witte's peptone is hard to obtain and the English peptone used in the English R-W method is hard to obtain in this country.

But it may be said: "Why use Witte's exclusively? There are lots of other pep-

tones and the exclusive use of Witte's is only a superstition anyhow." In answer to this may be adduced the conclusion reached by Wright¹⁶ who, after examining a number of brands of American peptone found only one that could safely be substituted for Witte's peptone. Furthermore, according to an article appearing in the *Journal of State Medicine* in Feb., 1919,⁵ English investigators working in the Research Laboratory of the Royal Institute of Public Health, employing the R-W method with various peptones substituted for Witte's found the coefficient of the same sample of disinfectant to vary from 7.7 to 15.

And, although Witte's peptone has, perhaps, been more uniform in quality than other peptones, it has hardly warranted the implicit trust that has been placed in it. In the English article above mentioned there is the following quotation from the *Lancet* (1916, p. 9): "Even before the war the preparation of a standard broth for bacteriological purposes was a matter of considerable difficulty, since different samples of Witte's and other peptones exhibited such marked variations when employed in nutrient media that the cultural features of an organism were apt to vary with each sample used."

It may seem extravagant to speak of the exclusive use of Witte's peptone as a superstition. But what else can you call our usual practice of employing a certain ingredient in our culture media simply because the label says "peptone" and has some man's name on it, when, as a matter of fact, peptone is only a name which as generally used stands for an indefinite mixture of proteoses, peptones and polypeptides varying enormously in composition, depending on the materials employed and the method of manufacture. It is to be hoped that in due course of time we shall become scientific enough to insist on knowing the real composition of our culture media and prepare them so as to meet the food requirements of the organisms we wish to grow.

The reasons already given are, however, not the only reasons that exist. From the legal standpoint and also by common practice, a phenol coefficient signifies only the relative germicidal value of a disinfectant against *B. typhosus*, and that determined in the absence of organic matter under narrowly limited conditions as to temperature and proportion of culture to disinfectant.

The facts already known in regard to differences in the resistance of various species of bacteria to disinfectants, are almost enough in themselves to make it obvious that no general conclusions can be drawn from a test made only against the typhoid bacillus.

Walters, in an article published in the *American Journal of Public Health*¹⁵ has considered this phase of the problem in a very interesting and able manner. Besides discussing the work done by Churchman and others, he gives the results of his own work with Pine Oil Disinfectant. Stated briefly, these results were as follows: A sample of Pine Oil Disinfectant having a phenol coefficient of 3.8 was found to have so little value against *Staph. aureus* that a 4% solution required an hour or more to destroy that organism, while in contrast to this a 5% solution of phenol killed *Staph. aureus* under the same conditions after exposures of from 5 to 10 minutes.

To the examples of specific action of disinfectants given by Walters I will add the following examples taken from some recent work of my own: Tested under identical conditions Chloramine T was found to kill *B. typhosus* in 10 minutes in a dilution of 1-500, while the same dilution required 30 minutes to kill *B. pyocyaneus*. On the other hand, a dilution of 1-1000 was sufficient to kill *Staph. aureus* in 10 minutes and a dilution of 1-2000 killed it in 30 minutes. Expressed in the form of phenol coefficients the varying activity of Chloramine T against these organisms is as follows: The coefficient with *Staph. aureus* is approximately 23, with *B. pyocyaneus* 2.1, and with *B. ty-*

phosus 16.6. So far as the tubercle bacillus is concerned neither Chloramine T nor any other chlorine disinfectant, is worth very much. For example, a 1-50 dilution of Chloramine T failed to kill the tubercle bacillus in 10 minutes, or diminish its pathogenic power so far as guinea pigs were concerned.

The specific action of disinfectants is discussed in the report of the A. P. H. A. Committee⁴ along with two other important factors which influence the action of disinfectants. These are concentration and temperature.

The efficiency of a disinfectant measured by the time required for it to kill a given number of organisms is not proportional to its concentration but to some power of that concentration. For example, with phenol the concentration exponent is six, while with mercuric chloride it is one. The significance of this is shown by the fact that the germicidal value of phenol increases rapidly with increasing concentration, and decreases with equal rapidity with increasing dilution, while mercuric chloride increases and decreases in germicidal power much more slowly.

The effect of temperature may be expressed by saying that while the temperature increases in arithmetical progression the velocity of disinfection increases with geometrical progression.

Since phenol coefficients are determined under certain carefully specified conditions of concentration and temperature while the conditions as to concentration and temperature in practical disinfection vary a great deal and are quite likely to be entirely different from the conditions under which the coefficient was determined, it is evident that a coefficient cannot furnish any reliable indication as to the practical value of any given disinfectant.

In recognition of these facts the Committee has recommended that in addition to the ordinary coefficient the following should be determined: First, the coeffi-

cient against other organisms than *B. typhosus*; second, the temperature coefficient; and, third, the concentration exponent or "time ratio."

It might seem from all this that the examination of a disinfectant has become entirely too complicated and yet it seems to me that unless another factor is also taken into consideration all the factors previously mentioned will, in many instances, completely fail to measure the real value of disinfectants. This added factor is the influence of organic matter upon the germicidal power of disinfectants.

It is true that Sommerville and Walker¹³ have devised a modified R-W technique for use in determining coefficients in presence of organic matter, although this is not officially a part of the R-W method, and the H-L method includes a modified technique for the same purpose. But in practice these are entirely ignored and when we speak of a phenol coefficient we ordinarily mean a coefficient determined without organic matter.

As a single example of possible error due to ignoring the effect of organic matter I will refer to a disinfectant which I once had occasion to examine. The coefficient of this disinfectant by the H-L method was 10, but it was so seriously affected by organic matter that the additional .4 (4/10) cc. of culture used in the R-W method brought the coefficient down from 10 to 3. Of what value would the coefficient be in this case, even though determined by the A. P. H. A. method, with due reference to other organisms than *B. typhosus* and due reference to the time ratio, concentration exponent, and temperature coefficient?

Finally, a phenol coefficient doesn't tell the user of a disinfectant what he really wants to know. Whether he be householder or public health official what he wants to know is what dilution of any given disinfectant to use for his own particular purpose. And even if the A. P.

H. A. method were in general use, and, in accordance with the Committee's recommendations, coefficients were furnished showing relative efficiency against other organisms than *B. typhosus* and the time ratio, concentration exponent and temperature coefficient were included for good measure, unless the user happened to be a disinfectant expert, and a mathematician as well, he would be none the wiser in regard to the question of what dilution to use.

What the ordinary citizen really does is not to look for a coefficient but rather for the directions furnished by the manufacturer, which he proceeds to follow without question.

What the public health official does I will not attempt to say, although it may be surmised that in many instances he imitates the ordinary citizen and follows directions without question. At any rate, W. G. Savage, in an article published in the *Journal of the Royal Sanitary Institute*,¹² makes the following statement: "I have been surprised in the course of enquiries to find how largely those who use disinfectants for practical public health work, and spend large sums of public money on them, have very little exact knowledge at their disposal to enable them to judge as to the kinds to use, the specific purposes for which to employ them, and the methods of application. They frequently rely upon the statements of the vendors of these substances, statements which cannot be always relied upon."

If this is true for the public health official it is not surprising that the ordinary citizen, with his profound ignorance of disinfectants and their use, relies entirely upon the directions given by the manufacturer, no matter how absurd they are. As an example of such directions I will cite the following, taken from the label on a sample of disinfectant: "For purifying the air of houses, schools, hospitals, etc., dilute one teaspoonful of the fluid with one quart of water and sprinkle

about freely." As a matter of fact the dilution recommended would not be sufficient to kill the typhoid bacillus under the conditions of the Rideal-Walker test, a dilution of 1 to 165 being required to kill the typhoid bacillus in 10 minutes under these conditions, while the dilution given is approximately 1 to 236. And, of course, it is all nonsense to expect such a procedure to purify the air.

Since the way we really do things, then, is to follow directions instead of bothering with phenol coefficients it might not be a bad idea to recognize the fact officially and abandon the use of the phenol coefficient. Instead of this, manufacturers of disinfectants could be required to have their products tested against the germs of the various diseases they mention in their literature, the tests being made under conditions simulating natural conditions as nearly as can be done in the laboratory, and they should be required also to recommend the use of dilutions of their products consistent with such tests. A guarantee that any given product had thus been tested and found efficient in the dilutions recommended would be worth more than any coefficient.

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Dysentery Bacillus in Urine of Infant.—There were no vaginitis, pyelitis, cystitis or other urinary complications in this case. The organism was discovered as the result of routine cultures on the 16th and 19th days. Stool cultures on admission and on the three following days, as well as three weeks later, were negative for *B. dysenteriae*.—C. Creighton, C. E. Wagner and W. C. Davison, *Johns Hopkins Bulletin*, 32, 50 (1921).

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Action of Mercurochromi, 220 on the Gonococcus.—Mercurochrome 220 shows a powerful germicidal effect against the gonococcus. The gonococcus is about 40 times as susceptible to the action of mercurochrome 220 as *B. coli*. Solutions of mercurochrome 220 lost their germicidal potency on standing, and should therefore be used only freshly made.—Ernest O. Swartz and David M. Davis, *Jour. A. M. A.*, 76, 844 (1921).

The Use of Mosquito Nets in the Past.—Sir Patrick Hehir, Major General (retired) of the Indian Medical Service, states in a recent issue of the *Lancet* that mosquito nets were used as a protection against mosquitoes in India by Europeans in 1828. The discovery of the malarial parasite by Laveran occurred long after this date, in 1881. The author suggests that the practice of the Babylonians and ancient Semitic peoples in anointing themselves with oil might have had an anti-mosquito significance. He also quotes from Herodotus, who described a device used by the ancient Egyptians to protect themselves from mosquito bites. It consisted of a fish net wrapped about the person. The Romans used the *conopeum*, or mosquito net, though certain Roman military leaders thought it unmanly to indulge in such protection.—*Mosquito Nets; Their Use in the Past. The Lancet*, March 12, 1921.—(J. A. T.)

SPECIAL OBJECTIVES OF PHYSICAL EDUCATION WITH RELATIONSHIPS TO PUBLIC HEALTH

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Most children have no homes, says Mr. Hethrington. Child life and home life have been sacrificed to industry. The home has become a dressing room and refreshment center. Old home functions are shifted to the school. Physical education is one of these, so recently in its new place that it needs interpretation.

PHYSICAL education is a part of education and must be interpreted as a part of the whole. It must be interpreted, however, from a broader point of view than that of the old school subjects or aims.

Physical education has been a part of the school function in some places for many years, but the efforts have been confined largely to corrective aims. Today school physical education, though it includes the older aims, has vastly broader objectives and this change is part of a great transition in the functions of the school.

The old function of the school was to teach the written language: "the three R's." All the rest of education, the big, vital, life-giving phases of education, went on in the home and the community. The home and community taught the real fundamentals in living; the school taught only the accessories, the original so-called fundamentals of school education.

With the rise of machine-dominated industry since 1860, all the home and community opportunities for education have been largely wiped out of existence. The old home industries have gone to the factory; social and recreative activities to public and commercial centers; intellectual, civic and political discussions to

the clubs. The modern industrial city, the specialized city residential section and the modern home have been evolved. The cramp of the city has come upon us and its customs in home life have extended to the country.

The child's community educational opportunities have been reduced to impossible back yards, dwarfish front lawns, sidewalks, streets and distant parks. The Playground Movement arose to meet this situation, but not one percent of our child population has access to playgrounds.

The home as an educational institution and child life in the home have been reduced to the dimensions symbolized by a forty-foot or even a twenty-five-foot lot and the tidy cramp of a bungalow, flat or apartment. The home has become an adult dressing room, a refreshment center, with numerous devices to convert sideboards into beds. The educational juice has been squeezed out of the home. Play (Nature's method of education) has no chance, and only the unusual parent can organize educational activities under such conditions. The sign has gone up "No children wanted." Those that are allowed, live in the cramp of an adult convenience. Most children have no real homes. Child life and home education have been sacrificed on the altar of an

organization of adult life for industrial expansion.

Hence we have seen the shifting of the old educational functions of the home and community to the school in the forms of manual training, home economics, industrial and vocational education, social education, moral education, art education, health education, recreational education, civic education and science education, with even suggestions of religious education.

The school has taken on new functions which were the old functions of the home and community. The new school physical education is a part of this movement. Social conditions and the needs of children are compelling the school to take over the systematic organization of the natural physical education that formerly went on in the home and the community.

For this reason, there is probably no phase of education or social effort so seriously in need of interpretation as this new yet old phase of education. The tremendous need for its successful organization is recognized, yet the whole weight of school tradition with its inertia and of the survival of asceticism with its contempt for the physical, and of scholasticism with its contempt for the emotions, and of Puritanism with its contempt for and fear of play, all stand against its successful organization.

The special functions, objectives or aims of the new school physical education must be considered from the following five standpoints:

I. Objectives in the organization of opportunities for and leadership of activities.

II. Objectives in adult adjustment.

III. Objectives in the development of the growing organism.

IV. Objectives in teaching standards of living for self-direction.

V. Objectives in the control of growth or health conditions.

I. The first function or objective of

education is the organization of opportunities for and the leadership of activities. Activity is the sole means of education.

Physical education is concerned with physical training or big muscle activities as distinct from the manual activities, linguistic activities, nature study activities, etc., which are the concern of other special phases of education. These big muscle activities are of three classes:

1st. The natural activities or big muscle play, including running and jumping; stunts on the playground or gymnastic apparatus, chasing and fleeing games, swimming and water stunts, boating, tussling and wrestling, athletics, folk games, etc.

2nd. Formalized or invented activities, including tactics, gymnastic drills, special corrective exercises, etc.

3rd. Related activities, including gardening, agricultural projects, industrial work—all activities using the big muscles vigorously, but organized for other than physical training purposes, yet having a physical training value.

The natural activities are those which have gone to pieces under the influence of modern home and community conditions. They are the activities which are being revived on the playground, in the swimming pool, in the gymnasium, and in the organization of hikes and outing activities.

Obviously the only place where the organization of opportunities for and leadership of these activities can be perfected to meet the needs of all the children, is on the school playground, the natural community center of the child's big muscle play activities or physical training.

As activity is the sole means of education, the adult's or society's objectives or aims in education or any phase of education are determined by the educational results of the activities organized and led. These educational results are determined by the mental and physiological

processes involved in the activities and the relationship of these functional processes to the growth, development and social adjustment of the child.

Hence the special objectives or aims of physical education are determined by the mental and physiological processes involved in big muscle activities and the functions or duties of the physical educator or leader of big muscle activities are determined by the leadership of these activities and his relationships to the functional processes and educational results.

These functional processes and results are considered briefly in the following sections on objectives.

II. Social adjustment is the most conspicuous and generally recognized objective of education. It is the remote and extremely complicated objective.

Every child, whatever his race or social status, must learn and become adjusted in some degree to adult customs or ways of living. These customs, the race, in the struggle to live, has developed. They fall functionally under eight headings, and may be listed here without definition merely for reference, as follows:

1. The acquisitive or economic customs.
2. The protective customs.
3. The sex and domestic customs, including sex practices, courting, marrying, home life, and child rearing.
4. The associative-communicative customs, including the forms of speech, and manners in social intercourse, respect and disrespect, etc.
5. The civic customs, or customs in coöperative effort.
6. The interpretative customs, or religious, philosophical and scientific customs.
7. The expressive or artistic customs.
8. The recreative customs.

These customs or ways of behaving

in racial adjustment become essential social objectives in child education. The racial forms of living must be acquired. There are, therefore, eight phases in the aims of education from the standpoint of social adjustment.

Society judges the quality of adjustment of every individual under each of these eight phases of adjustment. Society has set up standards. The individual must become adjusted according to racial standards if he is to receive the approval of society.

Applied, these phases and standards of adjustment become criteria for estimating the values of any activity organized by education. Activities must be judged by their values in giving the several kinds of adjustment. For the sake of brevity in this paper the adjusting functions of big muscle activities may be judged in conjunction with their developmental values, which will be considered next.

III. The development of the child is the fundamental objective or aim of education. Every child is born into the world a helpless infant and must go through a long period of growth and development before adult capacities are fairly established. Social adjustment is achieved only through this process of development. The functions or aims of physical education or any phase of education must be interpreted from the standpoint of its special values for development and the relationship of this development to adjustment.

The developmental process must be considered under four phases and the functions or aims of physical education defined under each.

First: In the activities of experience character is developed.

All activities arise out of hungers and instinct tendencies and these tendencies are developed (under the control of satisfactions or dissatisfactions) into desires and impulses and emotional habits, attitudes, and ideals. All activities, therefore, have character training values ac-

ording to the instinct tendencies they exercise.

The functions of physical education in character training bulk large, because big muscle activities are the outcroppings of the fundamental instincts and emotions of human nature. For example: The stunts exercise the achieving instincts; the tag or choosing and fleeing games are all dramatizations of situations in the social relationships of children which exercise the racially old instincts in the acquisition of food and the protection of the self; athletic activities are big muscle, social, fighting plays—they exercise the powerful social, fighting and egoistic instincts and emotions and in precisely the same social relationships in which they function in adult social, business, civic or political struggles. Human character is fundamentally an expression of these instincts. Social life cannot go on a minute without an expression of them. They are developed inevitably. The form of the development determines the fundamental qualities of any character.

The essential thing to recognize in this character-training function of physical education is not that some special abstract character qualities are developed, but the fact that the activities exercise and develop the deepest, most powerful instincts and emotions in human nature. The development may be good or bad according to the leadership, which will be considered later.

Note that this character-training objective of physical education is purely educational, that it is not a "health" aim, and that it is one of the two if not the most profound and important objective of physical education.

Second: In the activities of experience, the intellect is developed and information acquired.

Intellectual development and the acquisition of information are integral parts of the learning process; so is the mastery of the motor mechanisms of the body,

which will be considered under the next phase of development.

One of the chief characteristics of the child is his intense curiosity, his great energy in exploration, investigation and experimentation. His tendency is to master the world. Every item of the environment mastered means information about, and ability to think about that item. This process goes on endlessly. Information about, and capacity to think about the environment, ranges from common physical properties up through the subtleties of science and philosophy.

Physical education contributes two fundamental items to this mass of information and skill in judgment:

a. In big muscle activities, skill in making judgments about the physical arrangements and shifting conditions of the environment is developed. Alert attention, the quick size-up of the strategy of the situation, and instant judgment are the very essence of the intellectual functions required in big muscle activities. No other activity in child life gives this kind of development in a comparable degree. Thus big muscle activities give strategic judgment for mechanical adjustments in all phases of life. Who ever heard of an athlete's being run down by an automobile or a street car?

b. Again, in big muscle social activities, insight into human nature is gained. These activities give the most intense social experience of any activities in child life. They are expressions of human nature; they are experiments with human nature. In the actions and reactions of this experience insights and judgment about human nature are developed. While the higher reaches of insight into human nature are gained through the special linguistic activities, the fundamental insights are gained through big muscle play. This development contributes to all phases of social adjustment requiring ability to deal with human nature.

Note again that these intellectual objectives of physical education are purely educational, they are not health objectives.

Third: In the activities of experience the psycho-motor mechanisms are developed. These are the mechanisms of volitional behavior—the linguistic, manual and locomotor mechanisms especially. This development is another phase of the learning process. Here the learning and thinking are focused on the mastery of the body instead of the environment.

All control of the body must be learned. The infant vocalizes instinctively, but he must learn the particular forms of vocalizing involved in the mother tongue. The infant tends to manipulate or play with all the natural objects of the environment, but he must learn how to handle the knife and fork or tools or the pen and learn how to typewrite or play the piano. The infant has creeping, walking and climbing reflexes, but he must learn to balance his body, to creep, walk, run, climb, throw and all the special movements in the infinite variety of games, in swimming, athletics, dancing, etc. Through activity the child develops the capacity to think and will movements. This is the only source of capacity to will any movement.

But this learning of movements does not measure the significance of the developed capacities. In the learning process nervous connections are made and muscle tissues developed. The development of muscle tissues itself is important (every individual should have sufficient muscular strength to perform any of the duties of life without fear of rupturing muscles or tearing ligaments) but natural muscular development is primarily a symbol of nervous development. Nervous development means the drawing out or building up of the latent inherited resources in the nerve centers and their connecting paths for action. The degree of this development of power is deter-

mined by the amount and intensity of the activities during the years of growth and Nature gives the impulses for the proper amount of activity in the repetition of play. A boy throws a baseball ten thousand times in order to learn to throw it effectively. So it is with each activity. Through the infinite repetition the nervous centers controlling a movement are developed. Thus nervous power is developed and it is developed in no other way.

For this nervous development, the functions of big muscle activities are of first importance. In these big muscle activities all nervous centers of the spinal column, the medulla, the cerebellum, the basal ganglia and the motor centers of the cortex, are involved and developed—all except those centers involved in the finer integrations of the fingers and in vocalization. The whole body becomes integrated as a powerful organ of the will through a well developed nervous system. This development is the source of all the fundamental strengths and skills, of posture and good carriage. It is the source of nervous efficiency for action in all phases of adjustment. It gives special adaptabilities in protective, recreative and vocational adjustments.

Physical education is concerned, therefore, with the development of the capacity to think and will the fundamental movements of life and with the development of the latent integrating functions of the nervous systems for power in action.

Note that these objectives of physical education in psycho-motor development are primarily educational; yet they have an important health value in the power and stability of the nervous functions.

Fourth, and finally, in the activities of experience, organic power is developed. Synonyms of organic power are vitality, vigor, recuperative power, capacity to assimilate food and expend great energy in work or play with a slow onset of fatigue. This phase of development is

the least recognized of all the processes in education because the orthodox study of education has been based on psychology instead of both psychology and physiology.

The functional source of this organic development is combustion. In vocal or manual activities the combustion in the muscles and the nervous centers used causes an increase in local circulation. Out of the exercise of these local nutritive changes comes the great vocal endurance of the public singer or speaker and the great manual endurance of the pianist or typist. In these cases, however, the amount of combustion is not sufficient to heighten appreciably the general circulation or respiration. On the other hand, in big muscle activities (running, for example), the bulk of muscles involved and the amount of combustion are so great that the call for oxygen and the elimination of waste products causes a greatly increased functional activity of the circulatory, respiratory and heat regulating mechanisms and soon of the digestive mechanism.

While we have, generally speaking, no volitional control over the organic functions, we can, by controlling the intensity and duration of big muscle activity, control indirectly and to a fine degree the heightened functional activity or exercise of the organic mechanisms and nutritive processes. In this way we control the development of organic power. The process is best illustrated by the training of the athlete. For example, the distance of the run or the amount of big muscle activity is determined from day to day and thus the amount of activity or exercise of the organic mechanisms is determined. In teaching jargon we "run with our hearts" and "breathe with our legs."

More, in this process we control the amount of assimilation. The athlete according to his temperament, loses weight each day and gains it back by the next day. This recovery of weight without left-over fatigue is the chief guide in

training. As the food for this recovery of weight must come from the digestive mechanism the process involves a tremendous heightening of the nutritive functions.

This developmental procedure begins in the squirmings of the infant, continues in creeping and walking and up through all the varied games, stunts and athletic activities of childhood and youth.

The leadership of big muscle activities to gain indirectly the exercise of organic functions and thus the development of organic power is an educational procedure, i. e., the organization of activities for educational ends. It is organic education. It is as accurate an educational procedure as learning to read or write. In some ways it can be more accurately determined.

Organic development apart from the local development associated with vocal and manual skills is purely the product of big muscle activities and thus the undivided function of physical education.

Here is where physical education makes a direct contribution to health. It develops organic power, vitality, vigor. This alone, however, does not guarantee health as there are some fourteen other factors which influence health. Yet it is the only source of organic power this side of heredity. All the other factors are favorable or unfavorable to the proper functioning of the organism, that is, to growth or health. Activity is the only source of the development of the latent powers planted in the organism by heredity.

It is important to note also that physical education in its direct interest in organic development must emphasize the educational rather more than the health objective. This is because exercise has a health value in maintaining nutritive efficiency in adult life and because adults with a refined egoism insist on applying adult hygienic standards to children. According to popular standards twenty minutes of exercise per day is sufficient

for adult health, and adults apply this standard to children. Note our State laws. Experience has shown, however, that children of the elementary school age (if they are to gain the development necessary for efficient citizenship) need between four and five hours of exercise or big muscle activities per day and children of the high school age need between two and three hours. The difference between the two to five hours and the twenty minutes per day indicates the difference in importance between the educational function in developing power through the years of child growth on the one hand and the hygienic function in maintaining efficiency after maturity on the other.

In the four phases of development just enumerated and defined, it has been shown that activities develop latent powers and that these developing powers are moulded to racial ways of living for social adjustment. The race judges the process, sets up standards concerning the quality of the development and adjustment and evaluates the activities according to their worth in giving either development or adjustment or both. As indicated, physical education is responsible for the broad, bulky fundamentals in each phase of development and adjustment. It gives power for action and adjustment rather than the refinements in action and adjustment. It is the foundation phase of education on which all the rest of education must be built. This brings us to the next objective in education: the teaching of standards of living for self-direction.

IV. Teaching standards of living for self-direction is the super-function, objective or aim of education. Out of it comes the capacity for self-direction according to the laws of hygiene, manners, morals, etc.

The child is, from the beginning, a self-acting organism. But his activities may be good or bad or futile or self-destructive. At first he must be cared

for, dominated, controlled, taught, led. As he develops, he gains the ability not only for self-activity, but for self-direction. Gradually he releases himself from the control of the home and the school. The quality of his self-direction will depend on the habits, ideas and ideals established during the period of growth and education.

This capacity for self-direction according to standards, is not the result of a new or different activity in the curriculum or of a different kind of development or adjustment from those already discussed. It is purely the product of the injection of standards of living into all of the activities and into all the development through the quality of the leadership. Teaching standards of living is, therefore, a function of every phase of education and of every teacher. It is an overhead or super-method for all teachers in the leadership of every detail of the educational process.

Physical education, because of the nature of the activities it directs, is charged with training for self-direction in the standards of social behavior and of hygiene.

a. In the leadership of big muscle activities, the teacher is in a strategic position for training and instruction in social habits and ideals. He is literally in charge of the child's chief laboratory activities in social experimentation. His influence is well recognized. It is here that the standardizing leadership loops up with the inevitable character-training tendencies of big muscle activities. Through his intimate association with character expression in the leadership of these activities and through the group and individual conferences naturally arising out of his leadership, the teacher must mould social behavior, habits and ideals for good or evil. The breadth of the opportunities for discipline and training are indicated by the tendencies in the expression of human nature in play, to bad manners, to violations of the rules of

the game, to selfishness in avoiding the rules of classification for fairness in competition or eligibility, etc. Sportsmanship is the golden rule applied to the ethics of sport. The lack of a standardizing leadership by an idealizing teacher (for activities are always led, if not by the adult, by the pick-up leadership of some child) is the terror of earnest parents. Every bad habit known to childhood and youth is the result of neglected play—play gone wrong. Every social problem centered in human behavior has its roots deep in this play gone wrong.

This is where physical education contributes to the fundamentals of moral and civic education. While the higher reaches of moral education should come through a personal leadership in literature, history, civics, etc., the training in the basic social habits and ideals must come in the leadership of the more fundamental activities. What is the use of teaching a boy loyalty from a book if he is learning muckerism on the athletic field? Moreover, the big muscle activities, because they are the most fundamental educational activities of child life, can be organized for all the boys and girls of the nation, irrespective of intelligence or social status, in such a manner as will secure standard character-training results; the literary activities cannot be so organized.

b. Again in the leadership of big muscle activities the teacher is in a strategic position for training in hygiene habits. He is literally in charge of the child's laboratory of experimentation in personal hygiene. This arises out of the child's intense interest in his big muscle achievements and his equally intense interest when properly led in his habits and bodily functions as these influence his capacity for achievement. The physical educator is the leader in the child's efficiency for achievement and his leadership is respected accordingly. He is in a position to teach and inspire. He is a

trainer in the best sense, and directs, even dictates, not only exercises but diet, sleep, rest, bathing, temperature regulation, cleanliness, avoidance of infections, stimulants and drugs, bad sex habits, bad mental moods, etc. He has the opportunity to "put over" the ideal of maintaining the highest physical efficiency, not merely to win a game, but for all the functions of life.

Teaching hygiene standards is again a divided function. The teachers of biology and home economics especially have deep responsibilities, particularly in giving standard information. Physical educators, however, are in a more strategic position for training in personal hygiene habits.

V. The control of growth or health conditions is an associated objective of education.

Education must control growth or health conditions if it is to realize its aim in development and adjustment in any degree. Education fails and must fail where it attempts to get development and adjustment against growth handicaps. Education, to realize its aims, must remove all handicaps; more, it must make growth conditions favorable to development, not merely tolerable. This means both that teachers must be trained for the functions of growth control or health supervision and that an administrative organization for growth control or health supervision must be established. Both points are important from the standpoint of the functions to be performed.

First I wish to emphasize the distinction between the function of the teacher in growth control and the administrative organization of growth control or health supervision. About the function of the teacher there can be no controversy among those who are thinking of the welfare of the children. About the administrative organization there may be, and frequently is, controversy.

Growth control or health supervision

is a function in some degree of every elementary teacher and the function especially of the physical educator as a teacher. The teacher is the only person conceivable in the school organization in constant contact with the children. He is on the firing line all the time. He is in the strategic position for first line functions in controlling growth conditions. Any efficient control of growth conditions must emphasize this function and train teachers for the function; otherwise the control will be less efficient than it should be or it will be limited by its extra costs and in many rural communities it will not exist at all.

The physical educator or specialized or departmental leader of big muscle activities, because of the nature of the activities he leads and his relationship to organic and nervous development, must be especially alert as to growth conditions. Otherwise the foundation results of education for which he is chiefly responsible will be cramped and thus the whole superstructure made unstable.

As to the administrative organization, that is determined by the special skill needed in growth control and the supervisory and administrative functions to be performed. It may range from a nurse to a corps of nurses and physicians. The leadership of such an organization is purely a matter of determining who is best trained for the performance of the functions. Few instructors in physical education have the training for this administrative function.

The first fundamental thesis of this

paper has been to suggest (the space is too limited to prove) that the special functions, objectives or aims of physical education are determined (a) by the natural results in development and adjustment of big muscle activities; (b) by the values of these activities for leadership in establishing standards of living for self-direction; and (c) by the associated necessity, because of responsibilities for organic and nervous development, of controlling growth conditions.

The second fundamental thesis has been to indicate that physical education makes a most profound contribution to health, especially through organic development, yet to confine its functions to health or to classify it as a phase of hygiene is as narrowing for an efficient organization of child education as to classify manual arts or home economics or biology or music as phases of hygiene, because they all contribute to health.

In conclusion it should be noted that we have been discussing the functions of physical education, not the ability of teachers to realize these functions. The functions of physical education or of any phase of school education are not determined by the limitations of teachers. The training of teachers is determined by the objectives of education. The objectives of education must be determined and teachers trained accordingly. Ultimately the success of education and, therefore, of citizenship and civilization depends upon teacher training institutions and especially upon our universities.



**In the July Issue of the JOURNAL look for
Reports made at the December Conference
at Johns Hopkins on Problems of County
Health Work.**

REVIEW OF OUR KNOWLEDGE OF BACTERIUM TULARENSE

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Bacterium tularense is associated with diseases of animals in which the lesions are indistinguishable from those of the plague. In man, deer-fly fever is resultant from Bacterium tularense. The organism bears no resemblance to the plague bacillus. Bacterium tularense will grow on egg-yolk medium only.

THE plague-like disease of ground squirrels was first observed by McCoy during the examination of rodents for plague infection at San Francisco, California. The early observations of this writer were published in 1910 and 1911, and in one of these articles is found the following significant suggestion: "—— judging from the large number of species that are susceptible, we are inclined to suspect that man might contract the infection." Such has proved to be the case. In 1914 Wherry and others working in Cincinnati, Ohio, reported two human cases. Again, in 1919, a bacteriologically verified case was reported from Utah by Francis.

The Animal Disease.—This disease is known to occur as a natural infection of ground squirrels throughout middle California and has been found among wild rabbits in Indiana. To experimental inoculation rodents in general, also monkeys, are susceptible in varying degrees. Mice take the disease readily; rats are susceptible, but not highly so. For practical purposes cats, dogs, pigeons, calves, swine, sheep, and goats may be considered insusceptible. From the experimental data it seems probable that the flea is the usual agent in the transmission of the disease

among animals under natural conditions.

The gross lesions of the disease vary somewhat according to species, and in any case are practically indistinguishable from those of bubonic plague. The guinea pig, which usually serves as the test animal, contracts the disease readily if even a minute amount of the virus is deposited upon the shaved skin. Death usually occurs in five to seven days. The site of inoculation is found to be necrotic, the contiguous lymph glands are hemorrhagic or caseous; a secondary chain of caseous glands is further found; small yellowish-gray necrotic foci occur in the liver; while the spleen is typically enlarged and thickly studded with these miliary necrotic granules. In some cases large areas of spleen are necrotic. Microscopically the granules are found to be necrotic, often showing much disintegration of nuclei and some surrounding polymorphonuclear infiltration. Guinea pigs which have been inoculated with cultures that have become partly attenuated sometimes develop a chronic form of the disease with marked enlargement of lymph nodes and other organs, which with the necrotic foci presents a gross appearance suggestive of tuberculosis.

The Human Disease.—One of the human cases of Cincinnati was a meat cutter in a restaurant; the other was a housewife who admitted having prepared rabbits for food. In both cases the disease began with a left ulcerative conjunctivitis which was soon followed by a corresponding preauricular and cervical lymphadenitis, fever and prostration. In one case the symptoms were severe, accompanied by delirium, and persisted altogether some seven weeks. The other case was much more mild. Both progressed to a satisfactory recovery.

The human case reported from Utah brings into consideration deer-fly fever or Pahvant Valley Plague, which, to quote from the article by Dr. Francis, is "a disease initiated (according to popular belief) by a fly bite on some exposed surface of the body and manifested by the enlargement of the lymph glands which drain the bitten area and by a fever of a septic type lasting from three to six weeks. The site of the bite and the affected lymph glands become tender and inflamed, and they commonly suppurate. There is marked prostration and the patient is confined to bed. Probably two dozen cases occurred in Millard County in each of the years of 1917, 1918 and 1919." The first case known to have terminated fatally was reported in 1919. This fatal case was shown by bacteriological methods to be an infection by *Bacterium Tularensis*, hence it seems altogether probable that this organism is the cause of deer-fly fever. As Dr. Francis' work was undertaken late in the season it was not possible to make a further study of cases nor to investigate the local rodents.

Bacteriology.—By inoculation experiments the virus of this disease is found to be present in very minute amounts of the heart blood of inoculated guinea pigs, in one case 1/100,-

000,000 cc. having proved infectious. It does not pass a bacterium-proof filter. The thermal death point is about 56° C. for ten minutes.

If the organisms are relatively scarce in the organs their microscopic demonstration is unsatisfactory; if abundant they can be well shown by certain dyes, such as anilin-gentian-violet. With this stain the organism appears as a minute coccus or rod surrounded by a well-defined clear zone.

Whether this is a capsule is doubtful. The utmost length including the clear space is seldom much more than one micron. The encapsulated appearance is not evident in case of cultural material unless mixed with some substance such as serum to furnish a stained background.

For the cultivation of this organism egg yolk is moderately diluted with salt solution, say three parts yolk to two parts salt solution, and tubed. The tubes are placed in a slanting position in a rack in the Arnold sterilizer, a board having been placed at the bottom to protect them from direct steam. The temperature is then brought up until the thermometer at the top shows a reading of about 73° C., at which it is maintained an hour more or less, according to the size of the tubes. If properly coagulated the surface is found to fluctuate or yield slightly when pressed with the loop. Upon the surface of this medium and in the condensation water the organism grows with sufficient luxuriance, reaching its maximum in about four days at 37° C. in a longer time at room temperature. (No other solid medium has been found satisfactory for the purpose.) Wherry and Lamb find that "hen's ovomucoid with a trace of yolk is also a satisfactory medium."

The cultural requirements are highly specific, as, so far as is known, the organism grows upon no other medium, and no other organism with

(which we are familiar shows the same type of fastidiousness.

Serum Tests.—The relation of the California, Indiana and Utah strains by immunity and serum tests has not been investigated.

For complement fixation tests with human serum the organism should be washed with alcohol and ether to remove lipoid; otherwise lipotropic, in other words, Wassermann-positive serums will react with the antigen, or perhaps with some derivative from the medium. For agglutination tests a simple emulsion may be used as the lipotropic property of serum does not seem to affect the agglutination reaction. For complement fixation work I heat my lipoid-free material in salt solution to 80° C. for a few minutes, sediment, and preserve the extract with glycerine. These extracts have been found to be highly antigenic and to keep well, at least for some months. They are not hemolytic nor anticomplementary, though fixation is not satisfactory if too much antigen is used.

There are no observations of significance upon human serum from cases of the disease. As far back as 1912 it was shown that certain normal serums react with this organism. These observations have been extended since, and the significance of this phenomenon is under investigation with more rigid control at present.

SUMMARY

Bacterium tularense infection, or the plague-like disease of ground squirrels first mentioned in 1910 has been found widely distributed among these rodents in middle California and has been reported among rabbits in Indiana. Two human cases were reported from Cincinnati, Ohio, in 1914. In 1919 this organism was isolated from a case of "deer-fly fever," an endemic disease in the Pahvant Valley of Utah. Rodents in general and

monkeys have been found susceptible to experimental inoculation. In its course and lesions the disease resembles bubonic plague. The organism is of small size and feeble affinity for stains, and, so far as known, egg yolk heated to a rather soft coagulum is the only satisfactory solid culture medium.

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COMPARISON OF TWO METHODS OF ADJUSTING THE HEMOLYTIC SYSTEM FOR USE IN THE COMPLEMENT FIXATION TEST FOR SYPHILIS

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In a series of comparative complement fixation tests the daily adjustment of the hemolytic system based on the titration of complement was found to give more accurate results than the adjustment based on the titration of amboceptor.

IN THE complement fixation test the marked variability of the guinea pig serum used for complement is such as to necessitate the daily titration and adjustment of the hemolytic reagents.

Many workers have followed the original technique of Wassermann and used a fixed quantity of complement in the complement fixation test, compensating for differences in its activity from day to day by varying the amount of amboceptor. Another group of workers has held to the use of a constant quantity of amboceptor, varying the amount of complement.

When the use of a fixed quantity of complement is adhered to, the arbitrary quantity selected usually represents on an average an amount sufficient to hemolyze the sensitized sheep cells which are added as indicator, with an excess to compensate for the anticomplementary substances of normal serum and antigen, guinea-pig serum is variable in its hemo-

lytic activity and also in its sensitiveness to fixation by normal serum and antigen alone; so that this fixed quantity of complement may provide on one day insufficient, and on another day much more than sufficient complement for the hemolysis of sensitized cells after its incubation with normal serum and antigen.

We have undertaken to show that a more accurate adjustment of these anticomplementary substances can be obtained by daily titration of complement and the use of a definite number of hemolytic units. With such an allowance of complement it should be possible to provide the necessary hemolytic unit, and a more accurate approximation of the unit or fraction of a unit required to neutralize the maximum anticomplementary effect of antigen and normal serum.

In order to determine the extent of the variation in hemolytic activity of complement in terms of our own reagents, a

portion of the mixture of guinea-pig sera diluted 1-10 was titrated against a constant quantity of sensitized cells (0.1 cc. of a 5% suspension of sheep cells sensitized with two units of anti-sheep amboceptor. The unit of amboceptor had first been determined by titration with several different specimens of pooled complement). The smallest amount of this mixture of guinea-pig sera necessary to produce complete hemolysis in one hour at 37° C. was considered the unit of complement. Titrations were made with 52 specimens of pooled complement, representing the sera of not less than six, and in some cases as many as twelve, guinea-pigs. One-tenth cc. of a 10% dilution of complement was found to contain as low as one and one-fourth units, and as high as three and one-third units, with an average of two and one-half units.

Before estimate could be made of the number of units of complement to be used in the test, it was necessary to establish the maximum anticomplementary effect of the reagents present. It was found by titration that a control consisting of 0.2 cc. of antigen (twice the amount used in tests) absorbed, nonspecifically, slightly more complement than the actual quantity of antigen and serum used in tests, and that this absorption approached but never exceeded one hemolytic unit. It was, therefore, decided that two units of complement would furnish a sufficient excess for use with our reagents to guard against the occurrence of falsely positive reactions.

A series of comparative tests on sera received for diagnosis was performed, using these two methods of adjusting the hemolytic system. The reagents were identical and the tests were done on the same day. In one method, that used in our routine diagnosis, the hemolytic system was adjusted by amboceptor titration. The sheep cells were sensitized with two or two and one-half units of amboceptor as determined by titration

with the complement in use, and the complement was employed in an arbitrary fixed dose. (This dose represented two or two and one-half, and often three hemolytic units.) In the other method, the hemolytic system was adjusted by complement titration. A quantity of 5% sheep cells sufficient for the tests to be performed was sensitized with two units of amboceptor, the complement titrated, and diluted so that two units were contained in the quantity to be used in the test.

Of 616 tests performed with plain alcoholic antigen using both methods of adjusting the hemolytic system, 92.8% gave approximately agreeing reactions. Of 1,077 tests with cholesterinized antigen, 82.8% gave approximately agreeing results with both methods. With each antigen the highest percentage of positive reactions was obtained in tests in which the hemolytic system was adjusted by complement titration. The difference in results with the two methods was most marked when there was greatest excess of complement in the arbitrary dose, that is, when the fixed dose represented two and one-half to three and one-third units. Complete clinical data were not available in regard to all the sera tested, but the majority of specimens showing increased reactions through restriction of the complement to two units were from treated cases or from cases with history or clinical signs suggestive of syphilis.

In July, 1920, the method of adjusting the hemolytic system by variation of complement was adopted in our routine diagnosis, and has been used in over 25,000 tests. It has required no more time than the former method of adjustment by variation of amboceptor.

That more delicate results in complement fixation may be obtained by titrating the complement than by titrating the amboceptor has been reported by Öttenberg¹ and² and more recently by Kolmer³. Their reports, however, have been

based upon tests of a comparatively limited number of sera.

To summarize, in these comparative studies the adjustment of the test on the basis of an amboceptor titration apparently failed to give as accurate results as the adjustment based upon complement titration. The adjustment by complement titration has been shown to be entirely practical even for a laboratory in which a large number of routine examinations are made.

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THE FAMILY DOCTOR AND THE GENERAL HOSPITAL IN THE ANTI-TUBERCULOSIS CAMPAIGN

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What has been done in 38 years of treatment of tuberculosis, according to this author, is merely to care for some of the sick. We have utterly failed in prevention. The problem is not to be solved by the few specialists, but by enlisting the many medical practitioners and opening the general hospitals to cases of tuberculosis.

THE most common of all serious diseases is tuberculosis. A persistent but futile attempt is made to relegate it to specialists in special institutions in special climates, but there is a dearth of specialists, and few patients can afford such treatment. Special institutions are usually located at remote points to which many patients are unable to go because of the sacrifices which a prolonged absence involves. Others, especially those with early or doubtful diagnoses, are unwilling to incur the stigma attached to

a sojourn in a tuberculosis hospital, and so, through no fault of his own, the consumptive is the most neglected of all the sick in any community although he is certainly entitled to treatment as adequate and convenient as is commonly available to a person who has pneumonia or itch or any other disease. It is rank injustice as well as a menace to the public health that he is denied it. Let us briefly review the unfortunate situation.

The family doctor, making a diagnosis of tuberculosis, is in a difficult

position. A skeptical patient may call in a less competent physician to contradict him and a very early diagnosis will often be disputed. Recovery from early tuberculosis is probable and will be regarded, by the uninitiated, as evidence of mistaken diagnosis, thus further discrediting the skilled physician, who may, therefore, hesitate to make a diagnosis until the case is no longer doubtful and hence past the point of easy recovery. The general practitioner gives up his patient as soon as he makes a diagnosis of tuberculosis, sending him away to a sanatorium, or merely advising "change of climate," upon which the patient seeks the customary boarding house life of some resort, or else, defiant, resentful, or indifferent he ranges in open rebellion or conceals himself like a wounded animal; in either case cursing the stupid conventions by which he is made an outcast.

The general hospital with a tuberculous patient is also in difficulty. Its rules, reflecting obsolete beliefs, exclude him. The staff is indifferent, the personnel is fearful, chronic cases are unwelcome. The convenient advice, "change of climate," is again offered and the patient is cast out.

The general practitioner is not usually interested in tuberculosis nor in its early diagnosis and treatment. If he were, and knew moreover, that his colleagues were equally skilled, he would not hesitate to make a diagnosis sufficiently early to protect the interests of his patient or to assume responsibility for his care in local hospital or domicile. If the patient knew that a change of climate is not often necessary, he would be easily reconciled to treatment in or near his own home. If the hospital staff had opportunity to treat and hence to become interested in tuberculosis and if the hospital clientele were better informed and more tolerant, it would be a simple

matter to provide adequate treatment in convenient places by combining in part the facilities of special and general institutions. When all family doctors are skilled in diagnosis and treatment and wise to foresee and courageous to forestall the development of clinical tuberculosis, even before a definite diagnosis is possible, when ample local facilities for hospital and dispensary care are provided and skilled personnel available therein, we shall have traveled far toward our goal.

A pioneer in this movement is Dr. George Dock of Washington University, St. Louis, who has long taught and consistently practiced the belief that general hospitals should not exclude tuberculosis. He states that the unfortunate practice has resulted in a loss to teaching and says:

"Tuberculous patients suffered, because they could not readily and near at home, get the sort of treatment they needed and that hospitals should furnish."

The National Tuberculosis Association in 1916 adopted a resolution recommending that general hospitals provide care for tuberculous patients. The Surgeon General of the U. S. Public Health Service publicly endorsed that policy in his telegram of April 27, 1920, to the American Medical Association, in which he said:

"I desire to urge more active participation by the general practitioner and by the general hospitals in the treatment of tuberculosis. To insure earlier diagnosis, properly train internes and other personnel, popularize treatment in the home climate, and provide additional facilities, I earnestly endorse the resolution passed by the National Tuberculosis Association in 1916, recommending that general hospitals should admit tuberculous patients and provide separate wards for that purpose. Sanatoriums and special-

ists in tuberculosis will always be needed and we should have more of them, but I believe that success in the anti-tuberculosis campaign is largely dependent upon, first, convenient facilities for observation and prompt treatment of patients with open tuberculosis and second, a sharpened perception and higher degree of skill by which the family doctor will make early diagnosis or even forestall development of clinical tuberculosis in the adult before a definite diagnosis is possible. To provide adequate care for tuberculous ex-service men and others, to protect infants from infection, enlist the aid of the general practitioner, allay phthisiophobia, and improve the home treatment of tuberculosis, the opening of general hospitals to this most common of all serious diseases will materially assist."

Dr. S. S. Goldwater of New York, an acknowledged authority on hospital administration, in commenting upon this telegram, says that the subject is an important public health movement and one that should be kept before the public, the medical profession, and those who are responsible for hospital administration until properly disposed of. He favors a working connection between tuberculosis clinics and general hospitals, saying:

"The contribution of hospitals to the public service would thus be greatly enhanced, the clinics would be strengthened, the public mind would be swept free of harmful misconceptions, and hospital internes, into whose hands the whole public health movement of the future eventually must be committed, would not enter into practice, as they often do today, lacking in the power to make an accurate diagnosis and a reasonably correct prognosis in cases of pulmonary tuberculosis."

The specific cause of tuberculosis was discovered 38 years ago. Surely,

no one is satisfied with the results since attained. Battles are not won by stretcher bearers alone and practically all we have done is to remove some of our wounded. We have utterly failed to prevent tuberculosis. Now, after many years, we know that, just as the soil of each newly-plowed garden though clean to look upon teems with invisible weeds, so each healthy human adult harbors a latent infection which becomes clinical tuberculosis under certain rather well-defined circumstances.

The tuberculosis problem, therefore, is not a special but a general one. Not by the few but by the many must it be solved. The family doctor, the general practitioner of medicine, must play a more important part. With a broader outlook and a new vision he must face the fact that upon him in most instances, a harrassed and unenlightened people are dependent for the warnings and admonitions necessary to alleviate stress at critical periods. With a commoner knowledge of tuberculosis and with increased facilities for diagnosis and treatment, there will arise a realization of the fact that an exact diagnosis of tuberculosis in its earliest stages is often neither possible nor necessary. A patient in whom tuberculosis cannot be excluded, but for whom a diagnosis of tuberculosis cannot be positively made, does not usually need sanatorium treatment. Such a patient, if warned against the stresses of life which actuate tuberculosis and given a few weeks' or a few months' régime in hygienic living under careful supervision, will continue, in all probability, free from the clinical manifestations of tuberculosis throughout a long and useful life. The physician treating such a patient may never know whether the patient was suffering from tuberculosis. The patient will not know. It is not necessary that either of them should know

With an increased knowledge of the principles governing the diagnosis and treatment of tuberculosis, will arise the consciousness of this fact, both among the laity and the profession. The most important measures in the prevention of tuberculosis at the present time and for all future time, are unquestionably those which will prevent the development of tuberculosis among persons with tuberculous infections.

If general hospitals are opened to tuberculous patients the man of moderate means can send members of his family there to the course of preliminary treatment which is essential to insure successful home treatment. The régime of unlimited ventilation, the love of freely flowing air, the methods by which a patient is kept warm and comfortable under outdoor conditions of sleeping, the practices regulating rest in bed and diet, as well as the sanitary precautions essential to pre-

vent the spread of infection, can all be inculcated in general hospitals. At the present time thousands of people of moderate means who could afford a short course of treatment in a general hospital, but cannot afford or are unwilling to seek prolonged sanatorium treatment at a distance, are attempting furtively to carry out home treatment under unskilled physicians, handicapped by the lack of necessary preliminary training.

It is through no fault of his own that the general practitioner has not been fully enlisted in this campaign. It is not entirely his fault that he is so poorly equipped to participate. His opportunities are boundless, his responsibilities are obvious and with a knowledge of his proper place in this, the greatest field for medical activities in the world today, a field in which the chosen few have failed, who can doubt that he will live up to the best traditions of his art!



Zinc Chloride Poisoning.—The authors report an outbreak of dermatosis affecting workmen in a wood preserving plant. Railroad ties were treated by tars and creosotes and by dilute solution of zinc chloride. Four types of skin lesions are described, the first three are well known and attributable to tar. They are dermatitis venenata, tar acne and tar cancer, so called, one of these latter lesions appearing on the scrotum and the other on the forearm. The fourth type of lesions which is the subject of the paper is described as a zinc chloride burn, the multiple lesions appearing on fingers, hands and forearms. All lesions were preceded by slight injury, such as abrasions, splinters, etc. The typical lesions is a small opening in the skin corresponding to size and shape of antecedent injury. Skin surrounding the small opening appears normal, but may be rubbed off, the subjacent area ap-

pearing white and bloodless. The small opening contains escharotic tissue. No evidence of infection and little or no swelling were noted. Some lesions were quite painful. Cause of lesions found not to be the dilute solution of zinc chloride used in treatment of ties, but rather the approximate saturation of zinc chloride on surface of ties subsequent to evaporation of solution. Successful treatment by removing escharotic tissue and filling crater with sodium bicarbonate alone or in combination with petrolatum. Prevention was finally effected after much experimentation by the use of flexible "linoleated" canvass gauntlets. The use of these gauntlets together with prompt treatment of trivial injuries to hands and forearms, resulted in freeing the workmen of the zinc chloride lesions.—Carey P. McCord and C. H. Kilker, *Jour. A. M. A.*, Feb. 12, 1921, p. 442.—(E. B. S.)

CONQUEST OF MOSQUITO-BORNE DISEASES*

By C. V. CRASTER, M. D.,
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TO paraphrase an old saying, there is nothing so dramatic in fiction which cannot be equalled in the experiences of everyday life; in this category the story of the conquest of malaria and yellow fever has few parallels. From it we may well learn a lesson in open-mindedness in the desirability of at times applying our new experience to those age long problems still with us in our schemes of disease prevention.

RETROSPECT

In unrolling the pageant of the centuries the records of great mean stand out in prominent relief among a deluge of cruelties and oppression, of lives wasted by plagues and pestilence, of kingdoms tottering down to ruin and oblivion, not only by the innate weaknesses of their economic states, but by a concurrent disregard of the accepted responsibilities between individual citizens in every form of civilized contact between its component parts. In these old records it is remarkable how a lessening of the social bonds was invariably followed by calamity, disease and death, all conclusive and annihilating.

To all who have had the opportunity of reading the history of vanished races and civilizations must have come the thought so ably expressed and crystallized by Ruskin: "To those among us, however, who have lived long enough to form some just estimate of the rate of the changes which are hour by hour in accelerating catastrophes, manifesting themselves in the laws, the arts, and the creeds of men it seems to me that now at least if never at any former time, the thoughts of the true nature of our life and of its powers and responsibilities

should present themselves with absolute sadness and sternness."

In the records which have been handed down to us of disease and pestilences we can trace in many instances what have been the abiding results upon ancient peoples.

LITERATURE

If we delve into the literature of the classics much is obscure—fable and fancy, mysteries and pagan mythology fill the ancient page and obscure the reasoning of the writers. By careful deduction, however, it is possible to place the events recorded in approximate modern settings.

In the literature of Egypt, Greece and Rome, occasional references will be found to "fevers" or blights, coming upon whole populations. Invariably such catastrophes were looked upon as visitations by outraged deities, for whose propitiation sacrifices, sometimes sanctified with human blood, were offered in appeasement. It is, therefore, remarkable to read that as long as two thousand years ago two writers, Varro and Columella, affirmed that malaria was directly carried by plagues of flies and mosquitoes.

EARLY RECOGNITION OF MOSQUITO AS DANGER TO HEALTH

In the writings of Josephus, who lived about 37 A. D., an inference may be drawn that the existence of mosquitoes and their danger was noted although in a somewhat mysterious or mystical phraseology. Describing the expedition of Moses against the Ethiopians he says: "Moses took and led his army before their enemies were apprised of his attacking them, for he did not march by the river but by the land, where we have a wonderful demonstration of his sagacity. For when the ground was difficult to be passed over because of the multi-

*Read before the New Jersey High School Conference, Rutgers College, New Jersey, October 30, 1920.

tude of serpents which it produces in vast numbers—and indeed is singular in some of these productions which other countries do not breed, and yet such as are worse than others in power and mischief and an unusual fierceness of sight—some of which ascend out of the ground unseen and also fly into the air and so come upon men unawares, and do them a mischief.”

As new civilizations arose and fell, vast regions in Asia Minor, Syria and Greece, formerly beehives of teeming life became stagnant and water-logged morasses. Harbors filled up with sand, bars clogged the rivers with silt, soon making great stretches of countryside expanses of marsh and tidal waters. Such must have been the ideal breeding places for mosquitoes whose active lives would naturally be directed against famished and ill-nourished remnants of peoples, dealing, as it were, the death blow to many a vanishing race. That the ancients were not, however, blind to the simple principles of hygiene is clear in the various health rules taught by the priest-physicians of Egypt, of whom I-EM-HOTEP was the Egyptian original of the Physician God ASKLEPIOS of the Greeks and Romans.

Herodotus, the Greek traveler and historian, who wrote about 420 B. C., described the precautions taken by Cyrus, King of the Persians, to ensure the health of his immediate following: “The Great King (Cyrus) when he goes to the war is always supplied with provisions carefully prepared at home and with cattle of his own. Water, too, from the River Choaspes, which flows by Susa, is taken with him for his drink, as that is the only water which the King of Persia tastes.”

“Wherever he travels, he is attended by a number of four-wheeled cars drawn by mules in which the Choaspes water ready boiled for use and stored in flagons of silver is moved with him from place to place.”

PLAGUE FEVERS AND THEIR RELATION TO CLIMATE

Malaria and yellow fever, however, as definite disease of so great a scourge as to be looked upon as national calamities wherever present may be said to be fairly modern in our histories of preventive medicine. Malaria first noted as a European problem, about the time of the Middle Ages, derives its name from the Italian, *mal*—bad, and *aria*—air. Such a name aptly described its prevalent association with those justly dreaded marshy lands of the Peninsula where abounded the mysterious fogs, mists and humid airs out of which came the mysterious infection. In the same sense influenza was a coined name to represent an unfathomed disease apparently due to influences undeterminable, obscure and sinister.

Yellow fever undoubtedly an old disease among man has probably existed in tropical and subtropical regions of the globe for ages, only occasionally visiting temperate regions during epidemic periods. So-called from the yellow color of the sufferers, who exhibit an intense jaundice, it was for many years regarded as a form of malaria and only in recent years was given the characterization of a distinct disease entity of very definite and local distribution.

The scourge of the tropics, yellow fever, defied all checks and sanitary measures, killing its victims by the thousand, pursuing its course ruthlessly through the years. The control of the twin diseases, malaria and yellow fever, is truly the romance of modern preventive endeavor.

A BRILLIANT ACHIEVEMENT

In the New World malaria was early recognized as an infectious disease, although little was done to prove the methods of conveyance. It is true that Nott of New Orleans in 1848 was convinced of the spread of malaria by mosquitoes, an opinion upheld by King of Washington in 1882. The final solution

of this world problem was not, however, consummated until a few years ago when Alphonse Laveran, a French army surgeon, assigned to the army in Algeria, noticed in the blood of cases of malaria a curious, crescentic parasite, which he described before the Academy of Medicine of Paris in November, 1880. Seventeen years later Sir Ronald Ross, a British army surgeon, after many disheartening failures and working amid the trying climate of British India forged the most important link in the chain of evidence as to the cause of malaria. By the most delicate of microscopic methods he was enabled to demonstrate the parasite described by Laveran in the stomach wall of the anopheles mosquito when the insect had been allowed to suck the blood of malarial patients. No discovery has more brilliantly crowned the efforts of modern preventive medicine. The mosquito was now revealed as the villain of the piece. Mists, humid fogs, and all the other fancies of ignorance were blown into thin air. Malaria, the scourge of the centuries, was shown to be carried by the bite of a mosquito infected with the blood of a person suffering from malaria.

No more romantic chain of events has ever been chronicled than shown in the further studies of the organism of malaria which was found to have a dual existence, so to speak, one distinctly asexual in man and another distinctly sexual in the tissue of the mosquito. In man the following asexual cycle, or schizogony, occurs. The bite of the mosquito—only of the female mosquito—transfers into the blood of the victim the parasite—*Plasmodium malariae*. This is a small uni-cellular microscopic body which upon admission immediately attacks the red blood cells, to which it attaches itself and upon which or inside of which it grows. It appears as a small clear body within the blood cells, exhibiting a slow ameboid movement. Growth takes place with the complete destruc-

tion of the invaded cells. Later the parasite breaks up into a number of separate segments or sporules, which are discharged into the blood. This discharge corresponds with the chills and fever of the malarial attack and is presumably associated with the release of a toxic substance from the destroyed cells. The cycle of development may vary from two to three days according to the variety of the parasite which is classed as Quartan, Tertian or Aestivo-Atummal in type.

LIFE CYCLE OF THE ORGANISM

The female mosquito having taken up the blood of the infected person the following, or sexual cycle, sporogony, takes place. The infected blood contains two forms of spores, a small round cell, the microgametocyte, from which small flagellæ are thrown off, the microgametes, and a larger cell the macrogametocyte from which by the exclusion of a small nucleus the macrogamete is formed. These two parasites fuse to form the perfect cell, the zygote. These zygotes penetrate the wall of the stomach of the mosquito, become encysted under its outer layer where they grow into large bodies, sporocysts, which finally undergo division into small secondary spheres called sporoblasts. The sporoblasts ultimately split up into small spindle shaped bodies, the sporogonites. These latter escape into the body cavity of the mosquito, making their way to the salivary glands from whence they are injected as the mosquito bites its victim.

The cycle of development in the mosquito varies according to the type of the parasite, occupying from 12 days to three weeks.

THE PRACTICAL PROOF

The life history of the parasite of malaria having thus been worked out it remained for the actual experimental proof of the conveyance from man to the mosquito and from mosquito to man. Medical science did not have long to wait

for this. In 1900 Dr. P. Thurber Manson, son of Sir Patrick Manson and Mr. Gerry E. Warren, whilst living in London voluntarily submitted to being bitten by infected mosquitoes sent from Italy and in due time developed attacks of true malaria.

MALARIAL MORTALITY IN ITALY

The actual loss in human lives due to malaria will never be known and cannot be estimated. Some idea of the mortality in malaria ridden countries, however, is shown in the case of Italy where during the ten years previous to 1902, 14,048 deaths from malaria were recorded.

DESTRUCTION OF MOSQUITOES AND QUININE THE REMEDIES

The presence of the malarial mosquito is now shown to be essential in the causation of malaria and in short we can say: No mosquito, no malaria, and conversely no malarial patient, no malarial infected mosquito.

The fight against malaria is, therefore, directed against the species of mosquito capable of harboring the disease, the *Anopheles*, the destruction of its breeding places, the drainage of swamps and stagnant pools, or if this is not feasible the oiling of these places, or the stocking of them with larvæ-eating minnows or other small fish. The proper covering of all water barrels, buckets, and drains is desirable, although this is not so important as in the case of the *Stegomyia* mosquito the carrier of yellow fever. Important also is the screening of all houses in malaria districts not only to keep the susceptible mosquito out but to keep the mosquito that has bitten a victim from getting out to infect other persons.

Wherever such measures have been taken it is safe to say malaria has been, if not stamped out, virtually controlled.

In some countries, however, the adequate draining of malarial swamps is too stupendous a task to be undertaken at once. In this case, as in the Italian malarial districts sterilizing of all malarial patients by means of the giving of qui-

nine has produced excellent results. Quinine is now shown to be a sovereign remedy for destroying the malarial organism in the blood itself.

In this method when an attack of malaria is expected 5 grains of quinine are taken daily. At the beginning of an attack 10 to 15 grains are taken followed by 5 or 10 grains every four hours. After the attack the dose is lessened although the drug must be taken for at least 30 days after an attack.

Ten years of quinine prophylaxis following 1902 the deaths in Italy fell from 14,048 as stated above to 3,853. Quinine prophylaxis is, however, only a temporary expedient and does not take the place of mosquito suppression for the reason that although it does prevent attacks of the disease it does not prevent infected persons becoming carriers of the infection for long periods of time.

A NEW SCIENCE

The chain of evidence now being complete there was heralded the new science of Medical Entomology. The prevention and elimination of malaria was now a simple problem of engineering and sanitation, in which the destruction of the breeding places of the malarial mosquito in marshes and water flooded areas was the first step. Equally necessary was the screening of dwelling houses and the disinfection of the malarial patient by means of quinine.

Thus is written the last chapter in malaria prevention; it needs only the application of those principles laid down to end forever the menace of malaria handed down through the centuries to be solved by science and modern preventive medicine.

YELLOW FEVER—A DISEASE OF TROPICS

The history of yellow fever is more recent than that of malaria, although ancient writers have described it fairly accurately. Formerly supposed to originate from the remittent fevers it was frequently confounded with typhus and typhoid fever. Cullen in 1750 called it

typhus icteroides and Grisolles called it typhus d'Amerique. Flint in 1868 showed it was different from the remittent fevers by the obvious deduction that its course was not modified by quinine or cinchona.

Yellow fever being confined to the warm belt of the earth's surface and seldom found North or South of 38 degrees of latitude, is therefore prevalent in the Gulf of Mexico, West Indies, Central America and parts of Africa.

However, in 1856, 500 cases occurred in the Quarantine grounds of New York Harbor, but in all cases the infection could be traced to ships arriving from infected tropical ports.

PIONEER STUDIES

Yellow fever has been extensively studied in recent years. The exact location of the disease had been accurately mapped and its clinical symptoms made the subject of detailed investigation. The infective material, however, and the methods of infection remained as a sealed book. That the disease was evidently contagious in some form was admitted by early investigators and the results of their deductions did much to direct research work in the right direction. Fenner in 1853 during an outbreak of yellow fever in New Orleans plotted the incidence of 40 cases and proved that the disease occurred in different places among individuals who had not been in contact with each other in the remotest way.

Dowler described an incident in 1805 in which a Spaniard, Don Cabanellos, volunteered to sleep in a lazeretto with his own children where yellow fever victims had died in order to prove its non-contagious nature. With him volunteered a number of galley slaves, the party numbering in all 50 persons. As a result not one of them was taken sick afterward. For this service Cabanellos was made physician to the royal household with an annual stipend of \$1,200,

a princely gift in those days. One year's imprisonment was also remitted the slaves who accompanied him.

Flint, writing in 1868, stated that the special infective agent of yellow fever could be transported in ships, but that this must be accompanied by high temperature.

A National Quarantine and Sanitary Convention held in New York in 1859 resolved that "in the absence of any evidence establishing the conclusion that yellow fever has ever been conveyed by one person to another it is the opinion of this convention that personal quarantine in yellow fever may be safely abolished."

This failure to establish any theory of contact infection more and more swung medical opinion in the direction of the possibility of some intermediate carrier of the infection. In 1882 Dr. Charles F. Findley stated his belief that yellow fever was related in some way to the prevalence of mosquitoes.

More definite proof of this relationship came in the years 1900-1902. A commission of U. S. Army physicians under the leadership of Major Walter Reed was sent to Cuba to study yellow fever. Disregarding all previous theories and working upon an experimental basis alone definite facts were soon demonstrated. The theory of direct contagion by infected material was soon disposed of by seven enlisted men of the army who volunteered to sleep in infected bedding of yellow fever patients. No disease resulted. In the course of the investigation yellow fever was caused experimentally in 22 instances, 14 by means of bites from infected mosquitoes and 8 by means of the injection of blood or blood serum from yellow fever patients. Dr. James Carroll submitted to a mosquito inoculation and suffered an attack of yellow fever. Dr. Jesse W. Lazear was accidentally bitten by an infected mosquito and died from yellow fever.

The exact infective agent carried by the mosquito was not found at this time.

FINDING THE CAUSE

The mosquito shown to carry the yellow fever contagion was the *Stegomyia fasciata* otherwise named *calopus*. It was found that this mosquito had a wide range corresponding to the latitude in which the disease was endemic.

In habits it was seen to be the direct opposite of the malaria Anopheles. Whereas the latter prefers marshy lands, fields, swamps and stagnant or slowly moving waters, the *Stegomyia* is a homely insect breeding in any water bucket, cistern or empty cans about dwellings. They do not fly far away, but as Rosenau says, "show a cat-like tendency to remain about their place of birth or adoption."

The result of this brilliant research in preventive medicine was almost immediately made use of in eradicating yellow fever in its ancient kingdom. Major William C. Gorgas of Mobile, Alabama, at the time Chief Sanitary Officer of Havana, Cuba, began a campaign for the eradication of yellow fever in that city (1901). By a systematic scheme of destroying the breeding places of mosquitoes around the dwellings in Havana and by proper screening of all yellow fever victims from contact with mosquitoes, he was enabled within three months to free Havana from yellow fever. The city had never been without yellow fever in 150 years. When the work upon the Panama Canal commenced, by the same methods Gorgas was enabled to make possible the health of the workers on this huge task and to convert "the white man's grave" into a health resort.

INTERNATIONAL HEALTH BOARD

The work so ably inaugurated by Gorgas has been carried on in Central America by the International Health

Board of the Rockefeller Foundation. A Commission from this board in 1916 under the direction of Gorgas was organized to locate the endemic foci of yellow fever in Central and South America. In June, 1918, an epidemic of yellow fever made its appearance in Guatemala. With the assistance of sanitary experts supplied by the International Health Board this epidemic was stamped out in a few weeks. The Rockefeller report states "the outcome was especially gratifying and encouraging in that it demonstrated that yellow fever could be controlled with the personnel and facilities available in Central American countries and at a cost well within their financial ability."

The contagion of yellow fever, that is, the definite contagion which is passed from mosquito to man is now within our view.

Dr. Hideyo Noguchi of the Rockefeller Institute as a result of his researches on yellow fever at Guayaquil has isolated an extremely minute spiral organism found in the circulating blood which he has named the *Leptospira icteroides* and which he believes is the infecting agent of yellow fever. It will be interesting to hear of the further life history of this organism in the body of the mosquito.

We have come then nearly to complete knowledge of the causation and spread of the twin scourges, malaria and yellow fever. Our store of information is filled to overflowing and it remains only to see that every human effort be made to apply our hardly-won knowledge to eradicate an age long pest deriving the very foundation of its being from the strong and robust of human kind. No expense in time and wealth is too great a price to pay for security against preventable misfortune.

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STATE ADVICE ON RURAL SANITATION

Within the past five or six years a number of state departments of health in the country have published bulletins with reference to the construction of privies and the disposal of water-carried sewage for individual houses. To the experienced worker in the field of sanitary engineering and sanitation generally these bulletins afford much interesting and useful material, but their value to the ordinary layman is questionable, primarily because they differ greatly in the details of their recommendations and also because they undertake to describe too great a variety of methods of doing essentially the same thing. In short, before these bulletins are published for popular use, the various authors by whom they are issued should get together and develop a consensus of opinion so that the instructions may be simplified and present a greater conformity.

The Sanitary Engineering Section of the A. P. H. A. has been trying to do something of the kind through its Committee on Sewage Disposal, in connection with which there is a sub-committee on Rural Sanitation. Last year at San Francisco this sub-committee submitted a very carefully prepared report covering the whole field of sewage disposal on a small scale. This report represents perhaps the best effort ever made to analyze thoroughly the design of various methods of sewage disposal proposed for small sized installations. It will be printed in a future issue of the JOURNAL. The value of the work of this sub-committee was emphasized by the voluminous written discussion that was submitted and the active discussion that took place at the meeting. The discussion would have been much more prolonged had it not been necessary to shorten it on account of lack of time.

If at the fiftieth annual meeting of the Association in New York City the subject of rural sanitation could be further discussed in the presence of a large representation from state departments of health, there would no doubt result a much better quality of bulletins dealing with construction of privies and small sewage-treatment works. Further than this, such a dis-

cussion would no doubt bring out the desirability of reducing privy construction at least to a simple standard form that might everywhere be recommended. The psychology of the general public is such that it demands not a large amount of fundamental reasoning and various alternatives, but a simple rule-of-thumb method whereby it can meet sanitary requirements. P. H.

MODEL HEALTH CODE FOR CITIES

The March issue of the JOURNAL carried a highly important and valuable report of the Committee on Model Health Legislation. The report consists essentially of suggestions for a model health code for cities. Being published in advance of formal adoption by the Association, it is to be regarded as a preliminary report.

In view of the program of the Association aiming to remove the employment of health officers from politics in so far as possible, the following recommendation in Regulation One of the report has attracted especial interest:

"He [the health officer] shall be appointed by the mayor, subject to the approval of the state health authorities. He shall be subject to removal by the mayor, but may have a public hearing if he desires."

Obviously, the purposes of this provision are to promote the appointment of efficient health officers, and to discourage the practice of removing the health officer for purely political reasons. While there is, doubtless, universal approval of these objectives, it is clear from discussion at a meeting of the Executive Committee of the Association and from various communications, that there is a variation of opinion concerning the method of achieving these ends.

One viewpoint has it that the old board of health has a great deal of merit after all, in that it fosters responsiveness to public opinion and guards against autocracy. It is held that if there is to be a board of health, this board should have real responsibility, which should include the appointment of the health officer.

A second view is that the selection of a health officer should be by a non-partisan appointing board, it being pointed out that this plan has been very successfully followed in such institutions as state universities.

A third opinion is that the mayor is and should be responsible for the administration of a city. Consequently, it is maintained that the mayor should have a free hand in appointing and removing his department heads.

The Executive Committee of the Association feels that since this report will have great influence in shaping health legislation everywhere, the provisions of the report should receive the most careful study. Members of the Association and others are, therefore, urged to examine the report, and to communicate their views to the Chairman of the Committee on Model Health Legislation, Dr. Carroll Fox, U. S. Public Health Service, Washington, D. C.

The report will again be considered at a meeting of the Board of Directors to be held in June and will come up for general discussion at the next annual meeting, November 14-18, 1921, in New York City.

COUNTY HEALTH ADMINISTRATION

Special attention is called to the reports of the Committee on Sewerage and Sewage Disposal and its sub-committees in this issue of the JOURNAL, Pp. 548 *et seq.*, which include the report and discussion on Rural Sanitation. Following the next-named broad subject further the JOURNAL for July will contain various reports from the December, 1920, Health Conference at Johns Hopkins University on Problems of County Health Work.

BOOKS AND REPORTS REVIEWED

The Chemistry of Enzyme Actions. K. George Falk, *Harriman Research Laboratory, Roosevelt Hospital, New York City.* New York: Chemical Catalog Company, Inc. Pp. 136. Price, \$2.50.

This is the first of the American Chemical Society Monograph Series, the publication of which was undertaken by the Society by arrangement with the Interallied Congress of Pure and Applied Chemistry, which met in London and Brussels in July, 1919. Scientific and technologic monographs, to the number of twelve, have already been announced, but this is the first of the eagerly awaited series to appear.

The series gets a fortunate introduction to the chemical world in having Dr. Falk as the author of the first of the monographs as he is a recognized authority in this field. It may as well be said that this book is not a "laboratory manual" but considers only the "theoretical" side of the subject. In his introduction the author limits his field to a study of reaction velocity, the relation of catalysts to this question, and a study of the chemical nature of enzymes which he defines as "catalysts produced by living matter." But he does not pretend to consider the descriptive side of the subject; nor does he discuss methods of preparation, nor technical laboratory methods of study, nor the enzyme actions of various tissues or extracts.

He considers monomolecular, bimolecular and termolecular reactions of pure chemical substances under definite conditions. This leads him to a general theory of chemical reaction and the effect of catalysts. The definition of catalytic agent is considered in some detail and brings the author to a discussion of chemical reactions catalyzed by enzymes.

A careful survey of the physical properties common to enzyme preparations is then made (hydrogen-ion concentration being considered) and then follows a discussion of the chemical properties. From the chemical nature of certain enzymes the author draws conclusions regarding the mechanism of enzyme action, considerable stress being laid on intermediate addition products.

The sections devoted to the discussion of the uses and applications of enzymes will have a wide appeal and with the concluding chapter on the present status of the enzyme question will be the cause of further stimulating the interest of all who are fortunate enough to read this portion of the book. In this connection he speaks of "industrial application of enzymes, enzymes of metabolism and catabolism, enzymes of plant growth, bacterial enzymes, and enzymes in laboratory work." He discusses the recent production of glycerine by the fermentation of sugar by yeast in presence of sodium sulphite.

The author's grasp of the literature is shown by the frequent and up-to-date references to scientific journals. The book should be in the library of everyone interested in biochemistry.

EDWARD MUELLER.



The Price of Milk. Clyde L. King, Ph.D. Philadelphia: The John C. Winston Co.

This work contains a very complete analysis of the varied issues which must be considered in fixing milk prices. Ordinarily, for convenience, these are termed the "law of supply and demand," but the author points in detail to the forces which must be included in this summary. It is contended that these elements are so interwoven as to give the gratifying assurance of fair market prices at all times, for dairy-men and milk buyers. Movements looking to the raising or lowering of prices cannot be long maintained by reason of factors beyond human control.

The cost of milk production is conservatively considered on the basis of our present knowledge. It is pointed out that a fairly uniform price is conducive to the economical conduct of the business, and also to stabilizing the use of milk. The book very properly criticises the ownership and operation of distributing and manufacturing plants by farmers, but advocates the coöperation of producers for collective price bargaining, as being in the line of efficient production, distribution and con-

sumption. Economies in distribution are of interest to the public by reason of their importance in fixing prices.

The author is inclined to favor standardization with skimmed milk, but some of his contentions concerning this subject will be questioned, especially his conclusion that, "as milk is tampered with anyway," the objection to standardization "largely falls to the ground." Some will be of the opinion that in the treatment of this problem, the author has not been as fortunate as in his consideration of other portions of his topic. It is stated that the addition of skimmed milk to whole milk "in reasonable quantities" cannot be detected. While this is indefinite as to proportions, there are protein-fat ratios in unmanipulated market milk, which fairly distinguish it from specimens of "market milk" which have been diluted with skimmed milk. He holds that fear of publicity prevents standardizing by responsible dealers, but fails to take into consideration the dealer who claims to be responsible and who standardizes, but by means of extensive advertising is able to control the columns of the newspapers.

Even if the book accomplishes no other useful purpose, it has done much for the milk industry, and the milk consumer, in pointing out that there is no economy to the final buyer through purchasing milk from shops, based on the amount of milk business of the average store. The bottle loss through shop traffic is larger than from wagon trade. By eliminating store sales, and thereby increasing the loads on retail wagons, milk can be delivered cheaper from wagons than from stores. Quality is also maintained at a higher level by wagon delivery alone. Although not favoring the zone system, under which only one dealer delivers in a certain street or territory, an experiment is cited where under this plan dealers made more money with a spread of four cents per quart, than under the old, or ordinary basis, with a spread of five cents per quart.

Relative to municipal ownership, the author is of the opinion that by no test can the milk business be deemed quasi-public business, and that if it is conducted on an ethical and conservative basis, will never be realized. This affords, at least, temporary consolation to the taxpayer.

The book offers an opportunity for ascer-

taining facts relative to milk production and distribution, and should have a large field of usefulness. It ought to be especially helpful to that group of individuals, who possessing no knowledge of dairying or the selling of milk, give generously by voice and pen, theoretical advice for the conduct of this business.

JAMES O. JORDAN.



Industrial Medicine and Surgery. *Harry E. Mock, M. D., F.A.C.S. Philadelphia: W. B. Saunders Co. Pp. 846, Ill. Price, \$12.00 net.*

Until Dr. Mock's book appeared there was no published work dealing broadly with the practice of industrial medicine and surgery and with the problems of industrial health administration.

In a field of activity of as recent development as that of industrial health work, there can be relatively little precise knowledge. It is undoubtedly of value, however, to the many interested industrial and mercantile executives and to industrial, medical personnel to have brought together a summary of present knowledge, to be able to profit by the experience of many of the most able workers in industrial hygiene.

The book is divided into six parts dealing respectively with industrial health service, prevention, industrial medicine, industrial surgery, medico-legal phases and reconstruction. The author, recognizing the complexity of interests involved in the conduct of industrial medical service, freely called upon various contributors for special articles and frankly quoted numerous reports. In so doing there was frequently introduced material having little to do with industrial medicine and surgery. The volume tends towards redundancy in many sections. It could be of fewer pages and still be of unimpaired value to the majority of its readers.

Almost encyclopedic, this book contains much information needed by those concerned with the development of industrial medical service, particularly in connection with large establishments. It is to be regretted that there has been rather little thought of the smaller industrial and mercantile organizations.

Industrial physicians are indebted to Dr. Mock for this useful contribution to the limited literature of industrial medicine.

WADE WRIGHT, M. D.

ASSOCIATION NEWS

SANITARY ENGINEERING SECTION

REPORT OF THE COMMITTEE ON SEWERAGE AND SEWAGE DISPOSAL

Presented to Sanitary Engineering Section, American Public Health Association, at San Francisco, Cal., September 15, 1920.

Last year the Committee on Sewerage and Sewage Disposal presented a report on Rural Sanitation as applied to the collection and disposal of night soil, sewage and garbage. This year the former Committee on Sewage Works Operation and Analytical Methods has been merged with the Committee on Sewerage and Sewage Disposal, which places all questions directly relating to the latter subject in the hands of a single committee. Owing, however, to the importance and character of the work heretofore carried on by the Committee on Sewage Works Operation and Analytical Methods, it has been thought desirable to continue this by a sub-committee.

The work of this committee has, therefore, been divided between two sub-committees: one on Rural Sanitation, consisting of Mr. John F. Skinner, chairman, assisted as *ex-officio* members, by Professor H. N. Ogden of Cornell University, and Mr. John C. Diggs, Sanitary Engineer, State Board of Health of Indiana, and one on Sewage Works Operation and Analytical Methods, consisting of Mr. C. B. Hoover, chairman; Mr. T. C. Hatton and Mr. W. L. Stevenson. A report from the former sub-committee is submitted herewith.

In last year's report on Rural Sanitation particular stress was laid on methods of dry disposal for the wastes from farms and country houses, brief sections covering wet disposal methods having been inserted for the sake of completeness. This year the sub-committee on

Rural Sanitation has taken for report methods of disposing of water-carried wastes from separate dwellings and institutions. This report may be considered as supplementary to, or superseding those sections dealing with wet disposal in the report of 1919, namely: Septic Tank, Imhoff Tank, Trickling Filters and Contact Beds, Surface Irrigation, Sub-Surface Irrigation, and Sand Filtration. With this provision the two reports cover the subject of the disposal of rural wastes in a brief but fairly comprehensive manner.

With tanks, as with privies, it is impracticable to specify the precise type and size that is best adapted to each individual situation. Conditions as well as types are too varied. Moreover, in a report of this general nature it is to be assumed that there may be other equally good devices that are applicable in a given case; but the committee has endeavored to outline several simple types that may safely be recommended to the layman and to give in a few words sufficient information to enable him to make a judicious selection.

Due acknowledgment should be made at this time to the valuable assistance furnished by Professor Ogden and Mr. Diggs in the preparation of the report of the sub-committee on Rural Sanitation.

KENNETH ALLEN, Chairman.
T. CHALKLEY HATTON,
JOHN F. SKINNER,
C. B. HOOVER.



REPORT OF THE SUB-COMMITTEE ON SEWAGE WORKS OPERATION AND ANALYTICAL METHODS

Presented to Sanitary Engineering Section, American Public Health Association, at San Francisco, Cal., September 15, 1920.

The purpose of this report is to suggest a summarized statement of the main facts relating to sewage disposal to be used by municipalities in their annual reports on this phase of municipal activity. There are two general classes of readers of municipal reports, namely, those who are casually inter-

ested and those who are especially interested. The casual reader wants only the main facts, while those who are especially interested want the fundamental data and often considerable detail data.

Many cities are unable to publish a comprehensive report due to fund limitations and

must confine their efforts to a condensed summary. A comprehensive report would probably be passed up by the casual or citizen reader and the condensed summary in narrative style is of little service to the interested reader. If a form of report could be devised which would fit both cases fairly well, it would supply a long-felt need and this report is submitted with the hope that it may at least approach this ideal. Too much detail often obscures the fundamental data which should stand out in bold relief and be readily accessible.

In using this report form, all the numbered sections under A should be included and answered with definite data or marked "not known." Under B all numbered sections should be used. If any particular section does not apply, simply record after it the word "none." For instance, take "B-2 Grit Chambers," if there are no grit chambers in the system of the city the report would record that fact as follows: "B-2 Grit Chambers: none," and the sub-data under B-2 would be omitted. Under "B-7 Oxidizing Devices," if the system has sand filters and no trickling filters or contact beds, omit the two that do not apply and simply report on the one that does apply. Under "C—Operating and Treatment Results," omit only the numbered sections that do not apply and use all numbered sections that do apply even though they must be answered by "not known."

Sewage Disposal—Summary of Data for Year.

A—GENERAL DATA

- A-1 Name of municipality and state.
- A-2 Population, census of 1890
1900
1910
1920
Present estimated.
- A-3 Area of city in square miles.
- A-4 Estimated population tributary to works.
- A-5 Total capacity of treatment works in M. G. D.
- A-6 Total area in acres occupied by the treatment works.
- A-7 Year plant was completed and placed in service.
- A-8 Character of sewerage system: % separate; % combined.
- A-9 Principal industrial wastes.
- A-10 Name of stream receiving sewage or treated sewage.
- A-11 Minimum discharge of stream in cubic feet per second.

Maximum discharge of stream in cubic feet per second.

Mean discharge of stream in cubic feet per second.

Mean summer flow (May 1st to Nov. 1st) in cubic feet per second.

A-12 Nature of sewage problem:

Prevention of nuisance.

Protection of water supply.

Protection of shell fish.

Protection of bathing beach.

A-13 Population living within radius of one-fourth mile of works.

Population living within radius of one-half mile of works.

A-14 Distance of works from nearest point of corporation line: distance of works from center of city.

A-15 Operating costs per year for past five years.

Where possible, these costs should be separated into cost of pumping, treating liquor, and disposal of sludge. Also separate each of these three main divisions into pay-roll, power, supplies, repairs, etc.

Total cost of treatment works.

Bond charges (interest and sinking fund) per year for past 5 years (separate interest and sinking fund for each year).

B—TREATMENT DEVICES AND OPERATING CONDITIONS

B-1 Screening system:

Brief description.

B-2 Grit chambers:

Number of units.

Dimensions of unit, length, width, depth.

Mean velocity of flow in inches per second.

Mean detention period in minutes.

B-3 Pumping equipment:

Kind of power used.

Type and number of pumps used.

Full load speed of pumps.

Total static head in feet.

Length and diameter of force main.

Maximum rate of pumping in M. G. D.

Minimum rate of pumping in M. G. D.

Mean daily pumpage in M. G.

Total flow for year in M. G.

B-4 How is sewage flow measured:

Maximum rate of flow in M. G. D.

Minimum rate of flow in M. G. D.

Mean rate of flow in M. G. D.

Total flow for year in M. G. D.

B-5 Sedimentation:

	Preliminary treatment.	Final treatment.
Type of tank used.		
Number of units.		
Sedimentation capacity in cubic feet.		
Sludge digestion capacity in cu. ft.		
Average detention period in hours.		

B-6 Sludge treatment:

- Square feet of open drying beds.
- Square feet of covered drying beds.
- Capacity of sludge pressing equipment.
- Scow capacity for deep water disposal.
- Type of filter presses used.
- Effective size of filter cloths.
- Number of filter cloths per press.
- Average thickness of sludge cake produced.
- Foreign matter added to sludge to assist in dewatering.
- Volume or weight of foreign matter added per 1,000 gallons of wet sludge.

B-7 Oxidizing devices:

Sand filters:

- Total area in acres.
- Number of units.
- Depth of sand.
- Average dose in gallons per acre.
- Average daily rate in gallons per acre.

Trickling filters:

- Total area in acres.
- Number of units.
- Kind, size and depth of material.
- Average dose in gallons per acre.
- Average daily rate in gallons per acre.
- Variable or constant head.
- How is variable head secured.
- Average service period in minutes.
- Average resting period in minutes.

B-8 Activated sludge:

- Total effective area of aerating tanks.
- Length, width and depth of aerating tanks.
- Number of aerating tanks.
- Type of air diffusion plates used.
- Ratio of diffusion plates to surface area of tank.
- Total effective area of sedimentation tanks.
- Length, width and depth of sedimentation tanks.
- Number of sedimentation tanks.
- How sludge is removed from sedimentation tank.

Percentage of sludge contained in aerating tank.

Percentage of sludge returned to raw sewage.

Gallons of excess sludge produced per million gallons sewage treated.

Contact period in aerating tank.

Maximum velocity of flow through sedimentation tank.

Cubic feet of free air used per gallon of sewage treated.

Pressure of air in pounds per square inch.

Type of dryers used in dewatering sludge.

Number and size of dryers.

Capacity of dryer unit in pounds of dry material per hour.

B-9 Sterilization:

Sterilizing agent used.

Parts per million available chlorine used.

Pounds of gas used per M. G.

Pounds of dry bleach used per M. G.

Point in treatment where sterilizing agent is added.

Average contact period of sterilizing agent and sewage.

C—OPERATING AND TREATMENT RESULTS

C-1 Screenings removed in cubic feet per million gallons.

Efficiency of screens in per cent.

Moisture content of screenings.

C-2 Grit chamber deposits removed in cubic feet per million gallons.

C-3 Wet sludge removed in cubic feet per million gallons.

Wet sludge removed in pounds per million gallons.

C-4 Air-dried sludge removed in cubic feet per million gallons.

Air-dried sludge removed in pounds per million gallons.

C-5 Pressed sludge produced in cubic feet per million gallons.

Pressed sludge produced in pounds per million gallons.

C-6 Moisture content of wet sludge.

C-7 Moisture content of dried sludge.

C-8 Moisture content of pressed sludge.

C-9 How is sludge disposed of?

C-10 If sold, upon what basis?

C-11 Net revenue from sale of sludge.

C-12 Suspended matter in parts per million:

	Minimum value	Maximum value	Mean value
Untreated sewage.			
Settled sewage.			
Oxidized sewage.			
Final effluent.			

C-13 Settleable solids in cubic centimeters per litre:

	Minimum value	Maximum value	Mean value
Untreated sewage.			
Settled sewage.			
Oxidized sewage.			
Final effluent.			

C-14 Oxygen demand in parts per million after 24 hours at 37 degrees C.

	Minimum value	Maximum value	Mean value
Untreated sewage.			
Settled sewage.			
Oxidized sewage.			
Final effluent.			

C-15 Stability value:

	Minimum value	Maximum value	Mean value
Untreated sewage.			
Settled sewage.			
Oxidized sewage.			
Final effluent.			

C-16 Dissolved oxygen in parts per million:

	Minimum value	Maximum value	Mean value
Untreated sewage.			
Settled sewage.			
Oxidized sewage.			
Final effluent.			

C-17 Nitrites and nitrates per million:

	Minimum value	Maximum value	Mean value
Untreated sewage.			
Settled sewage.			
Oxidized sewage.			
Final effluent.			

C-18 Miscellaneous or special operating or treatment results:

NOTE: C-13 and C-15 are recommended as a minimum testing schedule for non-technical operators. It is also recommended that composite samples made up of portions collected at hourly intervals through the day, or through the full period of 24 hours, be used for the laboratory tests and analyses.

It is recommended that the samples be stored on ice and that a constant temperature incubator be used.

C-16 should be determined on one or more special samples, all other determinations being made on iced composites. Nitrites and nitrates to be determined together by the reduction method. When possible, settleable solids should also be expressed in parts per million.

When stability by methylene blue test is expressed in hours that color is retained, the temperature of incubation should be given.

C. B. HOOVER, CHAIRMAN.
T. CHALKLEY HATTON,
W. L. STEVENSON.



REPORT OF THE SUB-COMMITTEE ON RURAL SANITATION

Presented to Sanitary Engineering Section, American Public Health Association, at San Francisco, Cal., September 15, 1920.

It was intended to offer a review of the literature and an extended bibliography of the subject; circumstances, however, have made it feasible to limit this portion of the work to a brief list of articles.

There is also presented a statement of principles to be observed, type plans for plants of various capacities and recommendations, for the aid of rural dwellers and public health officers.

I.

PRINCIPLES TO BE OBSERVED

1. Wastes to be Treated.

- A. Sanitary or closet wastes, water carried.
- B. Bath, sink and kitchen waste.
(In case of a large kitchen supplying

an institution, a grease trap may profitably be installed on the kitchen drain before it joins the main sewer.)

- C. Dairy waste, if large in amount, should be treated separately, the sludge precipitated with alum or iron, and only the effluent admitted to the sewer. (This properly comes under "industrial wastes.")
- D. Stable waste should be screened to exclude straw, feed and other solids, after which the liquid wastes and a limited amount of wash water may be admitted to the sewer.
(Gasoline and wash water carrying mainly inorganic solids should be excluded.)

2. Choice of System of Treatment.

A. Discharge into large or non-potable stream.

- (a) Remove floating and coarse solids and grease by septic tank or by biolitic tank followed by settling tank.
- (b) Discharge through submerged outlet.

B. Discharge into potable stream or into small stream whose waters are drunk by cattle, or upon a bathing beach.

- (a) Remove grease and solids by Imhoff tank.
- (b) Oxidize on sand filter or on trickling filter.
- (c) Discharge through submerged outlet.

C. Discharge upon soil, no stream available.

- (a) Remove grease and solids by septic, biolitic or Imhoff tank.
- (b) a. If remote (at least 500 feet from dwellings) and land is available, discharge intermittently into furrows of irrigation field, growing crops on the ridges.
(Vegetables which are eaten raw should be excluded.)

b. Discharge intermittently into subsoil distributing tile.

- (1) If the ground is sufficiently dry and porous, this will be sufficient.
- (2) If the ground is not sufficiently dry and porous, lay another system of drains midway between the distributing tile, one foot lower and leading to a free discharge.
- (3) If soil is heavy, in addition to the last method (2) lighten the soil by deep plowing and by mixing in sand or cinders.

D. For a hotel, an institution, or a community of several hundred people,

where power and daily attendance are available, and where a non-potable stream receives the discharge.

- (a) Remove coarse solids and grease by self-cleaning fine screen and scum board.
- (b) Discharge, as fresh as possible, through submerged outlet.

II.

DETAILS AND DIMENSIONS OF PLANT UNITS.

1. Basis of Design.

A. Septic tank.

Capacity: $\frac{1}{2}$ day's flow + 1 cu. ft. per capita (minimum size 10 persons).

$$L = \pm (b + h) \text{ or } \pm \sqrt[3]{V \text{ bh.}}$$

B. Biolitic tank.

(a) Agitation Chamber. Capacity: $\frac{1}{3}$ day's flow. Square in plan with hopper bottom; hopper one-half total depth. Bottom slopes, 4 vertical on 3 horizontal.

(b) Settling Chamber. Capacity: $\frac{1}{6}$ day's flow + 1 cu. ft. per capita. Area same as Agitation Chamber.

C. Imhoff tank.

(a) Settling Chamber. Capacity: $\frac{1}{4}$ day's flow; twin channels; rectangular in plan; bottom slopes, 4 vert. on 3 hor.; slot, 4 inches; gas trap 5-inch horizontal.

(b) Sludge Chamber. Capacity: 2 cu. ft. per capita from bottom to level 8 inches below slot.

(c) Gas vent. Length of tank and not less than 12 inches wide.

(d) Sludge pipe. 4-inch C. I. soil pipe.

D. Trickling filter.

Capacity: not over 36 gallons per sq. ft. daily nor less than 8 cu. ft. per capita.

Material: broken stone, brush or lath. Plan: rectangular or hexagonal.

Depth: 4.5 ft. to 6 ft.

E. Sand filter.

Capacity: not more than one gallon per sq. ft. daily; not less than 87 sq. ft. per capita.

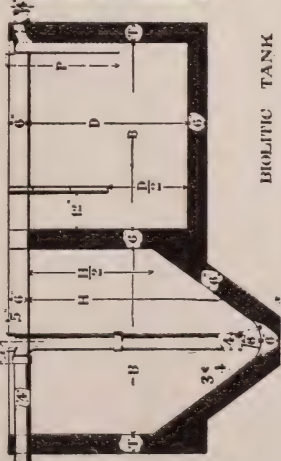
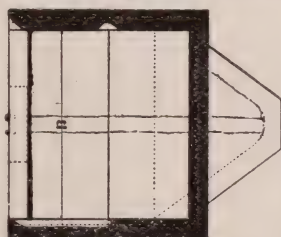
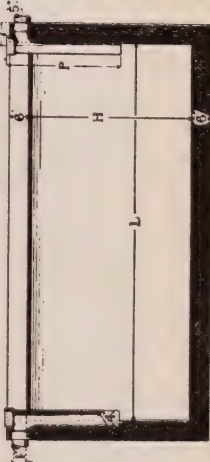
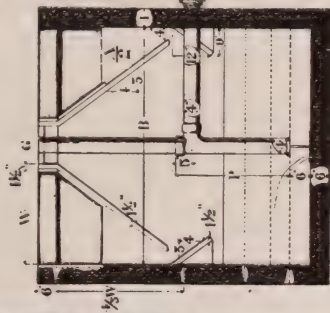
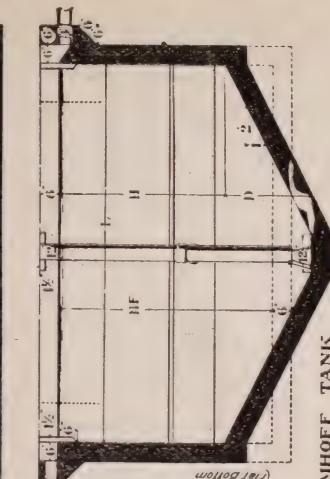
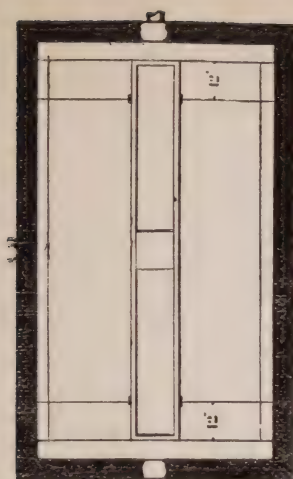
F. Broad irrigation.

Not less than 436 sq. ft. per capita.

Not less than 10 sq. ft. per gal. daily.

AMERICAN PUBLIC HEALTH ASSOCIATION PLANS FOR ISOLATED SEWAGE DISPOSAL PLANTS SEDIMENTATION AND DIGESTION UNITS

— SANITARY ENGINEERING SECTION —
Committee on Sewage and Sludge Disposal — Sub-Committee on Rural Sanitation
September, 1920.



BIOLOGIC TANK

UNIT	DIMENSIONS	Letter	10 Persons 500 Gals.	20 Persons 1000 Gals.	50 Persons 2500 Gals.	100 Persons 5000 Gals.
SEPTIC TANK	Length, inside	L	5'-0"	5'-0"	10'-0"	12'-6"
	Breadth, —	B	5'-0"	5'-0"	5'-0"	5'-0"
	Height, Bottom to Water Line	H	5'-0"	5'-0"	5'-0"	5'-0"
	Thickness of Wall, Piers, T-Y	T-Y	5'-6"	5'-6"	5'-6"	5'-6"
BIOLOGIC TANK	Breadth of Square Chamber	B	5'-6"	5'-6"	5'-6"	5'-6"
	Height of Wall, Piers, T-Y	T-Y	5'-6"	5'-6"	5'-6"	5'-6"
	Length of G. Wall, Piers, T-Y	L	5'-0"	5'-0"	5'-0"	5'-0"
	Length, inside	L	5'-0"	5'-0"	5'-0"	5'-0"
IMHOFF TANK	Breadth, —	B	5'-0"	5'-0"	5'-0"	5'-0"
	Height of Settling Chambers	H	5'-0"	5'-0"	5'-0"	5'-0"
	Width of Settling Chambers	W	5'-0"	5'-0"	5'-0"	5'-0"
	Height of Floating Bottom	H	5'-0"	5'-0"	5'-0"	5'-0"
SEPTIC TANK	Height of Floating Bottom	H	5'-0"	5'-0"	5'-0"	5'-0"
	Thickness of Wall, Piers, T-Y	T-Y	5'-6"	5'-6"	5'-6"	5'-6"
	Length of G. Wall, Piers, T-Y	L	5'-0"	5'-0"	5'-0"	5'-0"
	Length, inside	L	5'-0"	5'-0"	5'-0"	5'-0"

SEPTIC TANK

G. Subsoil irrigation.

- (a) Area of tile field: Not less than 100 sq. ft. per capita, nor less than 2 sq. ft. per gal. daily.
- (b) Tile distributors.
 - a. Length, 20 feet (average) per capita, depending on the soil.
 - b. Spacing, gallons per capita \div 10, but not less than 5 ft.
 - c. Diameter, 2 inches, up to 50 gals. per capita and 16 discharges daily; 3 inches above 50 gals. per capita, daily.
- (c) Number of discharges daily = daily flow \div contents of tiles, but not over 16.

2. Dimensions of Units are Exhibited in Table 1.—(Page 553.)

3. Drawings. Two drawings are submitted.

A. Plate I—Exhibits plans of sedimentation units as follows:

- (a) Septic tank.
- (b) Biolitic tank.
- (c) Imhoff tank.

A table exhibiting dimensions of four sizes of each unit corresponding with the table of dimensions given above is also incorporated on the drawing.

B. Plate II. Page 555. Exhibits:

- (a) A compact plant for fifteen persons which has been repeatedly constructed. It contains settling chambers for grit and sludge, a siphon chamber and a discharge chamber. It discharges into a subsoil irrigation system.
- (b) Trickling filters, both rectangular and hexagonal in plan, together with table of dimensions.
- (c) Dosing device for trickling filter.

4. Sedimentation and Digestion Units.

A. The type of tank to be selected may be governed by cost or other conditions as follows:

The Septic tank is cheapest to construct.

The Biolitic tank will yield less sludge to handle and

The Imhoff tank will produce the clearest effluent and the least offensive sludge which can be most conveniently removed with-

out interfering with the operation of the tank.

B. Construction.

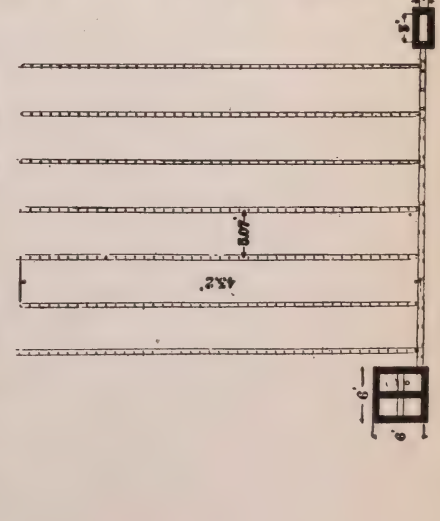
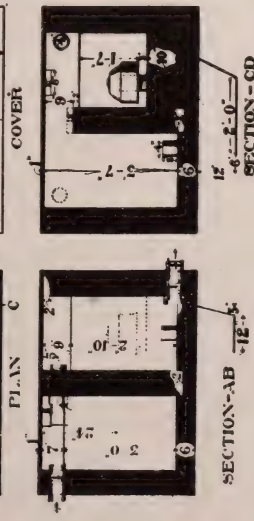
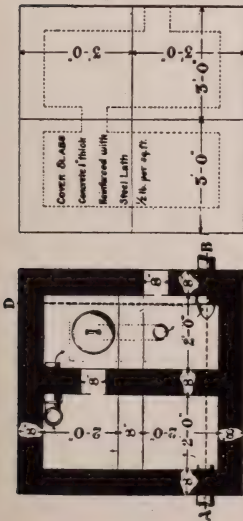
- (a) The material may be concrete as shown on the drawings, Plate I, or wood may be employed with earth banked against the sides.
- (b) The sloping bottom planks of Imhoff settling chambers should be built of planed lumber, down the upper surface of which sedimented solids will slide unassisted, and up beneath which gas bubbles will rise freely without being trapped.
- (c) Protection against frost should be furnished by providing board covers which will also prevent objects other than sewage from getting into the tanks. Covers should not, however, be air tight.
- (d) Dimensions are shown for four sizes of each type of tank in a table on Plate I.
- (e) The location of the tank should, if possible, be at least 100 feet from the nearest dwelling and all openings to the tank should be screened.

C. Operation.

- (a) In warm climates it may be necessary to raise the sides and ends of the gas vent of the Imhoff tank to prevent boiling over into the settling chamber, but by keeping the upper surface of the sludge some distance below the slots and by removing scum before it becomes heavy, this will, in general, be unnecessary.
- (b) Sludge should be removed from Septic tanks and from the settling chamber of Biolitic tanks when it nears the limit of 1 cu. ft. per capita. This may be once or twice a year. The tank will have to be temporarily out of service during cleaning. The Imhoff tank may operate uninterruptedly during the drawing of sludge which should occur several times during warm weather. A considerable quantity, about $\frac{1}{2}$ cu. ft. per head, should be left in the tank after

AMERICAN PUBLIC HEALTH ASSOCIATION
PLANS FOR ISOLATED SEWAGE DISPOSAL PLANTS
SUB-SOIL IRRIGATION-OXIDIZING UNITS

Sanitary Engineering Section
Committee on Sewage and Sludge Disposal — Sub-Committee on Rural Sanitation
September, 1920.

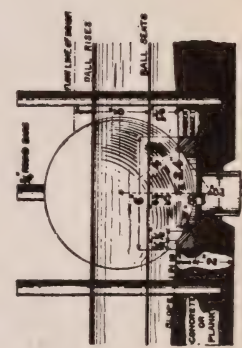
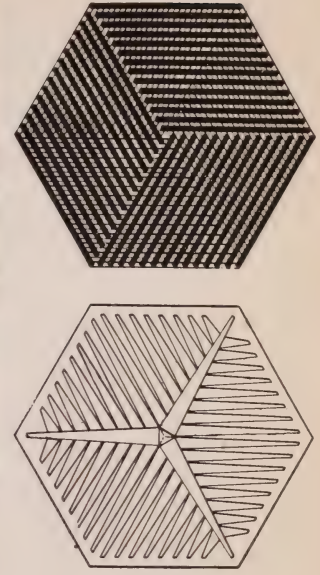


TRICKLING FILTER

SHAPE	DIMENSIONS	100 Percent 100 Percent 100 Percent
PLAN		100 Percent 100 Percent 100 Percent
RECTANGULAR	Length in feet	100 Percent 100 Percent 100 Percent
	Width in feet	100 Percent 100 Percent 100 Percent
HEXAGONAL	Side in feet	100 Percent 100 Percent 100 Percent
	Radius in feet	100 Percent 100 Percent 100 Percent
CIRCULAR	Radius in feet	100 Percent 100 Percent 100 Percent

DOSING TANK

SHAPE	DIMENSIONS	100 Percent 100 Percent 100 Percent
PLAN		100 Percent 100 Percent 100 Percent
RECTANGULAR	Length in feet	100 Percent 100 Percent 100 Percent
	Width in feet	100 Percent 100 Percent 100 Percent
HEXAGONAL	Side in feet	100 Percent 100 Percent 100 Percent
	Radius in feet	100 Percent 100 Percent 100 Percent
CIRCULAR	Radius in feet	100 Percent 100 Percent 100 Percent



each drawing, and it should be drawn before its surface reaches the slots.

D. Design. The three types of tanks are illustrated on Plate I.

- (a) The period of detention provided is 12 hours in both Septic and Biolitic tanks and 6 hours in the Imhoff tank. The latter figure is about double the best practice in large units. The period is lengthened on account of the relatively large momentary fluctuations of flow in a small system.
- (b) Efficiency. The velocity through these tanks is but a fraction of an inch per minute so that the sedimentation will approximate that of a quiescent liquid.

5. Details of Dosing Devices.

- A. (a) Whenever sufficient head is available a flushing siphon similar to that shown in the small plan on Plate II may be used. It has an average discharge of 0.65 cu. ft. sec. and no moving parts. It requires 2 ft. head from the flow line of the tank to the surface of a trickling filter if tapered board distributors are used. If a single sprinkler nozzle or a splash plate is used, an additional head of 6 ft. will be required for a filter for 100 persons. Sprinklers should not be considered for very small plants, as they are not apt to receive the necessary attention.
- (b) Where head must be conserved, use a floating ball valve. Such a device has been found to operate satisfactorily for ten years without attention. It requires but one foot head from the flow line of the tank to the surface of the trickling filter if tapered board distributors are used. If a single nozzle or splash plate is used an additional head of 5 feet will be required for a filter for 100 persons.

This device consists of a ball 8 inches in diameter, preferably

of hollow copper (wood, hollowed out and waterproofed will answer), weighing 3.30 pounds. It seats on a rubber gasket at the low level of the sewage in the dosing tank and rises from the seat and floats when the level of the sewage rises 3 in., thus discharging this 3-inch stratum from the dosing tank and an additional quantity equal to that which flows into the dosing tank during the discharge period. The amount of the dose thus depends upon the area of the dosing tank and the duration of the discharge, which latter is governed by the size of the orifice provided below the seat of the floating ball valve.

It is desirable to have the ball weighted to seat the same side down and to have it loosely guided so that it will find its seat promptly when the low level is reached. The piping is made up of stock fittings. This dosing device may be placed at one side or above the filter, as convenient.

- B. (a) If there is sufficient head and a sprinkler nozzle is used, the Columbus type is preferred for summer use, and the Worcester type if the plant is operated in the winter. The Columbus nozzle tosses the spray high and secures ample contact with the air, whereas the bed will not freeze over the surface with frequent discharges from a Worcester nozzle with its flat trajectory.
- (b) If a splash plate is used, suspend a 4-inch pipe around the falling stream to within 4 inches of the splash plate to prevent wind from deflecting the stream from the center of the plate.
- (c) Least head will be required if in connection with the floating ball valve, tapered distributing boards are used. These boards should not be laid loosely on the filter as they are liable to warping and displacement. They should be mounted as a unit in

TABLE I

Population and Gals. per Day																																							
10 People at 30 gals. = 300 gals.					20 People at 40 gals. = 800 gals.					50 People at 50 gals. = 2500 gals.					100 People at 60 gals. = 6000 gals.																								
Character of Unit					Dimensions					Dimensions					Dimensions																								
l.		b.		h.*		Contents		l.		b.		h.*		Contents		l.		b.		h.*		Contents																	
1. SEDIMENTATION.																																							
A. Septic Tank.....																																							
5'		2'		3'		30 c. f.		6'		3.5'		3.5'		73.5 c. f.		10'		5'		4.33'		217 c. f.		12.5'		8'		5'		500 c. f.									
B. Biotic Tank.....																																							
(a) Agitation Chamber.....																																							
2.5'		2.5'		3.33'		13.9 c. f.		3.5'		3.5'		4.5'		36.75 c. f.		5'		5'		6.07'		111 c. f.		6.75'		6.75'		9'		273 c. f.									
2.5'		2.5'		3.33'		20.8 c. f.		3.5'		3.5'		3.33'		40.8 c. f.		5'		5'		4.25'		106 c. f.		6.75'		6.75'		5.17'		235 c. f.									
C. Imhoff Tank.....																																							
(a) Settling Chamber.....																																							
5'		2x 1.23'		1.64'		10 c. f.		6'		2x 1.83'		2.44'		27 c. f.		10'		2x 2.5'		3.33'		84 c. f.		12'		2x 3.54'		4.72'		200 c. f.									
5'		4'		13.31'		20 c. f.		6'		5'		14.45'		40 c. f.		10'		6.25'		15.60'		100 c. f.		12'		8.33'		17.39'		200 c. f.									
2. OXIDATION.																																							
D. Trickling Filter.....																																							
4'		4'		5'		80 c. f.		6'		6'		4.5'		162 c. f.		6'		Side		Hex-agon		4.5'		93 sq. ft.		8'		Hex-agon		5'		166 sq. ft.							
30'		30'		3'		900 sq. ft.		40'		40'		3'		1000 sq. ft.		60'		60'		3'		3600 sq. ft.		80'		80'		3'		6400 sq. ft.									
E. Sand Filter.....																																							
F. Broad Irrigation.....																																							
G. Sub-soil Irrigation.....																																							
4356 sq. ft. =					0.10 Acre					8712 sq. ft. =					0.20 Acre					25000 sq. ft. =					0.52 Acre					60,000 sq. ft. =					1.38 Acre				
200' of 2' Tile					1,000 sq. ft.					400' of 2' Tile					2,000 sq. ft.					1,000' of 3' Tile					5,000 sq. ft.					2,000' of 3' Tile					12,000 sq. ft.				

* Bottom to water line.

† Flat Bottomed Tank.

33' x 12' Rectangle may be used.

*Bottom to water line.

Flat Bottomed Tank.

18'x12' Rectangle may be used.

a frame which can be leveled and centered.

Two general forms are suggested for square or rectangular and for hexagonal beds. In general, fasten the main distributing boards loosely to the lateral distributing boards and immediately above them. Raise the center of the whole system until the best position is reached as shown by a few trials. When once fixed there need be no further adjustment for the dose will always be of the same intensity.

Tapered board distributors consist of main distributors, two for rectangular and three for hexagonal beds, and lateral distributors. The number required is $(3S-2)$ for rectangular beds and $6S$ for hexagonal beds, where S is the side of rectangle or hexagon in feet. The thickness of the distributors need only be sufficient to prevent warping. The main distributors will be 12 inches wide at the center and 2 inches at the ends. They will reach to within six inches of the edge of the bed. The lateral distributors will be similar to those proposed by Frank and Rhynus of the U. S. P. H. S. They will be 8 inches wide, tapering to 2 inches with beveled edges and spaced 8 inches c. to c. They will reach to within 6 inches of the edge of the bed.

6. Trickling Filters.

A. Construction.

Filters may be constructed of broken stone, lath or brush from $4\frac{1}{2}$ feet to 6 feet deep.

For a stone filter the bed, in plan, may be circular if it is to be dosed by a spray nozzle or a splash plate. If tapered boards are used, the rectangular plan is simplest. The hexagonal plan also lends itself to tapered board distribution and approximates the circle for spray or splash distribution. It also has an advantage shared by the rectangu-

lar form when lath or brush is used as filling of these materials can be regularly and uniformly spaced in each layer and crossed by that in the next succeeding layer as illustrated on Plate II.

- (a) Stone filters. The finer the material which can be used without clogging, the more surface will be exposed and the better the efficiency. Clogging relates not only to obstructing the filter to the passage of liquid, but also to the passage of air.

Sound stone, which will not weather, of well shaped angular fragments, with all fine material excluded, will operate successfully with a well clarified sewage, in sizes which will pass a $1\frac{1}{2}$ -inch screen and be retained on a $\frac{3}{4}$ -inch screen.

If a sprinkler nozzle is used it should be supplied by 2-inch C. I. soil pipe from the dosing chamber.

Underdrains will be 4-inch vitrified tile laid with open joints on a 1 per cent grade about 6 feet c. to c. The bottom of the filter may be concrete or puddled clay sloped 2 inches toward the drains. The inverts of the tiles will be level with the valleys, and the ridges between drains will be level with their axes.

The side walls of filters may be of concrete, or if not too much above ground, plank sides may be constructed and banked with earth or dry rubble walls may be piled up if large stones are available.

- (b) Lath filters. An attempt should be made, with this filling, to make the length and breadth of rectangular filters multiples of 4 for convenience in construction. Thus a filter for 50 persons at 50 gallons per capita daily might be 8 ft. x 12 ft. and 4.5 ft. deep. The lath can best be piled as suggested by Frank and Rhynus, 3 in. c. to c. in each

layer, and after crossing layer No. 1 with layer No. 2, the laths in layer No. 3 will be laid parallel to layer No. 1, but with the center of each lath directly over the center of the space between the laths in row No. 1.

A lath filter needs no walls except to protect from freezing.

- (c) Brush filters. As brush can be cut to any desired length, any convenient dimensions may be used for either rectangular or hexagonal filters. In the square and hexagonal plan all brush for a filter will be uniform in length.

A loose pile of brush is useless, as it offers but little surface to the sewage. Brush should be tightly packed and laid in one direction in layers about 9 inches deep and should then be crossed by the next layer. A convenient way is to make up "fascines" (such as are described in the U. S. Army Engineers' Manual) of tightly bound bundles of straight brush with all leaves removed. The brush may run up to an extreme size of 2 inches at the butt. It should be laid in both directions so that the fascines, when compressed and tightly bound, will be uniformly about 9 inches in diameter.

After a layer of fascines is placed in the filter a second layer is placed transversely, after which the bindings of the lower layer are cut. To prevent the filter getting out of shape it may be held in position by stakes pinned through it with wire binding the outside of each layer to the stakes.

The brush filter is more efficient than lath, as in the latter there are broad surfaces of contact, while the brush touches only in lines and points, thus presenting more oxidizing surface to the sewage.

A brush filter needs no walls except to protect from freezing.

B. Operation.

- (a) Trickling filters have been operated successfully at various rates depending upon size of stone, method of application and character of sewage. Brush filters in North Toronto originally constructed 5.5 ft. deep settled down to 4.5 ft. and still operated successfully. The rate was increased by steps from 2,000,000 gals. per acre daily in August, 1914, to 7,250,000 in December, 1916. At the same location slag filters produced about the same results on one-third the amount of sewage.
- (b) Under rural conditions and assuming efficient preliminary sedimentation as specified herein, it is thought that with depths of 4 ft. to 6 ft. we should provide sufficient filter surface so as to apply not over 36 gallons per sq. ft. daily and a volume of filter material not less than 8 cu. ft. per capita. We may construct within these limits and still not increase the depth unduly.
- (c) For a small plant it is not considered necessary to provide a final sedimentation basin following a trickling filter, for the solids which pass out with the effluent, if immediately diluted, are inoffensive.

7. Sub-Soil Irrigation.

A. Nomenclature.

- Q = Gallons, total daily.
 g = Gallons, per capita daily.
 p = Persons contributing.
 A = Area of tile field.
 d = Inches, diameter of tile.
 L = Length of tile per capita, feet.
 S = Spacing between lines of tile, feet
 c. to c.
 n = Number of discharges daily.

- B. This method of disposal consists in the intermittent discharge of clarified liquid waste, equally through all parts of a system of subterranean leaching tiles, throughout a sufficient area of porous soil.

The organic matter is oxidized

much as it is in an artificial contact bed, but the water is removed both by downward percolation, and by surface evaporation after soaking laterally and upward by capillarity. When the area is planted, as it should be, moisture is also transpired from the plant surfaces.

The more open the soil and the more freely it drains, the more nearly it approaches the trickling filter in its action, with increased oxidizing capacity as compared to the contact bed.

As the level of saturation of the soil rises temporarily at each discharge and then subsides, some of the interstitial air is alternately exhaled and inhaled. Frequent doses are, therefore, desirable as long as the interval is sufficient for the lowering of the line of saturation to the level of the bottom of the tiles.

Character of soil. Soils are variously classified, depending upon size of grains and openness to drainage, as:

Gravel
Coarse sand
Medium sand
Fine sand
Very fine sand
Silt
Fine silt
Clay.

The effective sizes of grains run from 1.000 to .0001 mm. Soils containing much of the smaller sizes at the lower end of this list often have the maximum of total voids, but the coarser soils have more continuous channels of larger cross-section and hence water passes through them more readily.

C. Area of tile field.

Based upon the work of Schlichter. Mr. Robert E. Horton has prepared a diagram published in the "Michigan Engineer," 1906, showing daily amount of downward infiltration in inches depth on surface, based upon effective diameter of grains and percentage of voids.

Using a size of grain corresponding to "very fine sand" or "silt,"

0.055 mm. and a very conservative percentage of voids (only 40 to 50 per cent of the average), viz., 20 per cent, the above mentioned diagram gives a daily downward infiltration corresponding to 4-in. depth on the surface. If we assume a factor of safety of 5 and thus use 8/10 in. of water daily we arrive at a limit of $8/10 \times 144 \div 231 = 1/2$ gallon per square foot, which is the factor used. One-half gallon per sq. ft. at 50 gallons per capita daily corresponds to 100 sq. ft. per capita. For a smaller per capita volume and correspondingly stronger sewage, increase the area per gallon by basing it upon 100 sq. ft. per capita. Thus we arrive at the first Rule (a)
Area of Tile Field: Not less than 100 sq. ft. per capita. Nor less than 2 sq. ft. per gallon, daily.

D. Length of tile.

Area being fixed, length and spacing of tile are interdependent for $A = p L S$. We may assume that the liquid and colloidal organic matter permeates the entire area of the tile field for a greater or less depth, but solids which may be carried into the tile will move but a short distance away from the tile joints and be filtered out from the liquid which passes on by capillarity through the soil. We may assume that the suspended solids which are carried over into the tiles will not amount to more than 100 p.p.m. About $1/3$ of these will be inorganic and about $2/3$ will be organic and will be partially taken up by vegetation or dissipated in the soil. At a specific gravity of 1.5 this becomes

$$\frac{50 \text{ gals.} \times 100 \times 231}{1,000,000 \times 1.5} = 0.77 \text{ cu. in. per capita daily.}$$

This material will be very fine and may, to some extent, be washed away from the joints into the earth by the flowing sewage, but neglecting this action and assuming that it fills the voids in the soil adjacent to the tile for a radius of 6 inches and assuming again that the voids amount to 20 per cent we will have a cylinder 12 inches in diameter 12 inches long surrounding each joint, from which must be

taken the volume of the tile. For a 2-inch tile $\frac{1}{2}$ -inch thick the volume of voids in the hypothetical cylinder of earth will be

$$12 \times 3.1416 (6^2 - 1\frac{1}{2}^2) \times .20 = 255 \text{ cu. in.}$$

$$255 \div 0.77 = 331 \text{ days}$$

per capita per joint. Applying a factor of safety of 3 we have 110.3 days per capita per joint. 6 years = 2,192 days. $2,192 \div 110.3 = 19.8$. Hence use a length of tile of 20 feet per capita and it may be expected that the plant will operate on the above basis for about 6 years.

If again we assume that the inorganic solids gradually collect in the tile and that the limit is reached when the tile is half filled, we have the following: Volume of 2-inch tile 20 feet long half full = $3.1416 \times 10 \times 12 = 377$ cu. in.

$$377 \div \frac{50 \times 231 \times 100}{3 \times 1.5 \times 1,000,000} = 1,469 \text{ days}$$

or 4.02 years.

E. Grade of tile.

An efficient system operates equally from every joint, covering the entire area. A small drizzling flow will seek the lowest joint and, at best, discharge from but few; therefore provide a flushing siphon and make each discharge equal to the capacity of the distributing tile. This is important and often, when overlooked, the result is failure.

The time of filling the drains is short compared with the time of emptying, hence the discharge from the tile joints is under hydrostatic conditions.

In order to make the flow from all points equal, the head must be the same over the whole system, hence lay the tile level.

Any collection of sediment in the tile would be apt to be carried on and piled up and the tile eventually plugged if operated under great velocity and high head.

For the longest system contemplated in this report 20 lines of tile 100 feet long will suffice and will readily fill from a common header. Five feet of 4-inch header will hold a volume equal to 20 feet of 2-inch tile. Five-inch

and 6-inch headers respectively will fill 31.25 ft. and 45 ft. of 2-inch tile.

F. Laying tile.

After excavating the trenches with a drainage spade, lay in the bottom strips of board 3-inches wide and level them. On these boards lay the tile, wrapping each joint with a strip of burlap to prevent the entrance of earth. The joints should be left open about $\frac{1}{4}$ -inch and the end of the terminal tile of each line plugged. Use always, unglazed drainage tiles one foot long. The header will be made of vitrified tile laid with tight joints, with the first length of drainage tile of each line tightly jointed in the side opening of a T-branch. Operating under very low head the soil may take up the entire discharge by capillarity.

G. Spacing of tiles.

Having obtained the area and length of tile the spacing between lines of tile is determined as follows:

$$S = A \div pL \text{ where } L = 20.$$

$$S = A \div 20p.$$

By the first rule, above mentioned, A must be not less than 100 sq. ft. per capita = 100p, nor less than 2 sq. ft. per gallon daily = 2pg. Using these values of A, we have as limiting minimum values:

$$S = 100p \div 20p = 5$$

$$S = 2pg \div 20p = g \div 10.$$

H. Size of tile and number of discharges daily.

With this area, length and spacing determined, we now come to the size of tile.

The area is based mainly on the amount of liquid handled.

The length of tile, upon the population contributing.

The amount of each discharge has been specified as equal to the capacity of all the tiles.

Hence this capacity equals the total daily flow divided by the number of discharges per day, or algebraically as follows:

$$Q \div n = (3.1416d^2 \times 12 \times 20p) \div (4 \times 231)$$

$$\text{whence } d^2 = (4 \times 231Q) \div 3.1416 \times 12 \times 20np = g \div .816n$$

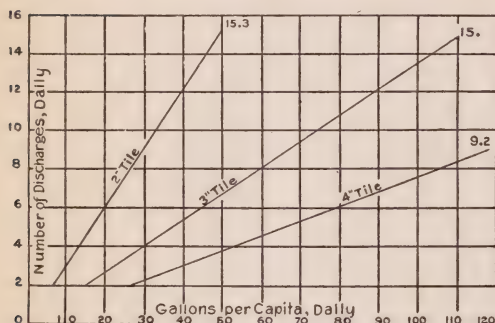
$$\text{hence } d = 1.11 \sqrt{g \div n} \text{ and } n = g \div .816d^2$$

For $d = 2$ in. $n = g \div 3.264$

" $d = 3$ in. $n = g \div 7.344$

" $d = 4$ in. $n = g \div 13.056$.

Plotting the values of n for various values of g in the last three equations we have three lines for $d = 2$ in., 3 in., 4 in.



We note that 9.2 discharges daily will not be exceeded in 4-in. tile until the per capita flow is over 120 gals. daily. That 3-in. tile with 15 discharges will carry 110 gallons per capita daily and that 2-in. tile does not discharge more than 15.3 times for 50 gallons per capita, daily. With a 2-in. tile the daily limit of $\frac{1}{2}$ gallon per square foot will fill 3.06 feet of the tile and at the prescribed spacing of 5 feet we have $5 \times 3.06 = 15.3$ discharges daily. Evidently the smaller diameter of tile is cheaper, as is also the smaller siphon chamber. If we consider that about one-half the daily flow is concentrated in 8 busy hours, and if we limit the discharges during this period to one per hour, we shall have 16 in 24 hours. This may be taken as the limit and will confine most rural plants to 2-in. tile. It will be noted from the diagram that 3-in. tile will not exceed 11 doses per day at 80 gallons per capita per day.

Thus we arrive at the second rule.

(b) *Tile Distributors.*

- Length 20 feet per capita.
- Spacing, gallons per capita $\div 10$, but not less than 5 ft.
- Diameter 2 in. up to 50 gallons per capita and 16 discharges daily; 3 in. above 50 gallons per capita, daily.

From which follows the third rule.

- (c) *Number of discharges per day =*
daily flow \div contents of tile, but
not over 16.

It will be noted that this system depends upon the porosity of the soil and its drainability. If it is very open, a smaller area might be used and the length of tile per capita reduced proportionally. The diameter and capacity, however, are dependent upon the number of discharges per day. A larger tile will hold a larger deposit of solids before it is choked, but we should provide efficient sedimentation in advance and remember that it may be necessary to relay the tile at intervals of four to six years, although there are cases where a system has operated successfully for 12 years.

I. Complete plant for fifteen persons.

A small plant, illustrated on Plate II, has been installed repeatedly with success. It will handle the sewage of 15 persons or 750 gallons per day. The tank is constructed of brick so that no concrete forms are required.

The system consists of:

- A brick structure 6 feet square outside with 8-in. walls and partitions, making four chambers, each 2 feet square. The first receives the sewage and retains most of the grit. Sewage then overflows into the second, in which the sludge collects. Scum collects in both first and second. The third is a siphon chamber drawing 19 inches depth and the last is a discharge chamber which connects with a tile field.
- The distribution consists of a 4-inch header of V. T. and 294 lengths of 2-inch farm tile laid in seven lines 5.07 feet. c. to c. The header consists of fourteen 2-ft. lengths of 4-in. tile and seven 4 in. \times 3 in. Tees, each $12\frac{1}{2}$ in. long. There will be 20 joints at $\pm \frac{1}{8}$ in., making the header 35 ft. 6 in. from the inside of the wall of the discharge chamber to the inside of a man-hole at the other end. The header should be laid straight so

- that it can be looked through by the aid of two mirrors.
- (c) This plant conforms to the rules laid down in II-1-g, viz:
- a. Area = 1,500 sq. ft.
Quantity = 750 gals. daily.
 - b. Tile 300 ft. 5.07 ft. c. to c. 2-inch diameter.
 - c. Number of discharges daily not over 15.5.
- (d) Cost. The material required, at present prices, including freight and haul, will cost about \$170.00. It consists of the following:
- 2,800 bricks.
 - 38 bags of Portland cement.
 - 2 cu. yds. sand.
 - 1.1 cu. yd. broken stone or screened gravel.
 - 48 sq. ft. or 24 lbs. steel lath.
 - 294—2 in. farm tile 12 in. long.
 - 15—4 in. V. T. sewer pipe 24 inches long.
 - 7—4 in. x 3 in. V. T. Tees, 12½ in. long.
 - 1—4 in. T-Y, C.I. soil pipe 24 in. long.
 - 1—4 in. soil pipe nipple 12 in. long.
 - 1—4 in. Miller Siphon, "Special Design," for sewage.

III.

RECOMMENDATIONS

Where an effluent stream is available, the above methods of treatment will satisfy the reasonable requirements of local authorities. Where land treatment is indicated, the sub-soil irrigation method is simple, adaptable and inexpensive. If intelligently installed, it will operate with a minimum of attention.

For any of the systems described, a grease trap on the kitchen drain, before it reaches the sewer carrying closet waste, will be advisable for, if discharged into a stream, grease is unsightly on the surface and if land treatment is adopted, the soil will not clog so quickly if grease is previously removed. A grease trap should be of size sufficient to hold the largest momentary discharge, for its object is to retain the liquid long enough for it to cool and allow the grease to separate and rise to the surface. The inlet pipe should be below the surface and the outlet riser should reach close to the bottom which should be hopper-form.

Care should be taken not to admit into the system matches, fruit rinds and other garbage or solid objects. No paper which will not quickly maserate should be used as the object is to exclude from both sludge and scum any materials of fibre or fabric which would otherwise accumulate and require frequent hand removal.

Tanks which depend upon biological processes for the digestion of sludge may need attention until the proper action has become established. This is particularly true of the Imhoff tank which is best started by "seeding" with sludge from an older plant. A little milk of lime introduced into the gas vent will correct acidity which may develop at the start. Attention for a short time and the removal of heavy accumulations of scum will, in general, start a tank satisfactorily.

In the plans submitted, as little fall as possible has been required of the sewage. Where sufficient head is not available sewage can be pumped from a small discharge chamber following the tank, into the Dosing tank. For this purpose any available power may be used. For large installations, the pneumatic ejector is particularly satisfactory.

IV.

CONCLUSION

As last year's report of the Committee on Sewerage and Sewage Disposal dealt with rural conditions in general, and as the committee's work this year is covering enlarged activities in other lines, it was thought fitting to supplement the former report by a more extended discussion, limited to the disposal of water-carried sewage in rural communities.

With this object the above report is presented by the Sub-Committee on Rural Sanitation.

JOHN F. SKINNER, Chairman.
HENRY N. OGDEN,
JOHN C. DIGGS.

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DISCUSSION ON RURAL SANITATION

The following communications followed the reading of the foregoing reports at the session of the Sanitary Engineering Section, American Public Health Association, at San Francisco, Cal., September 15, 1920.

PRIVIES AND SEWAGE DISPOSAL FOR FARMS

WILLIAM PAUL GERHARD, DR. ENG., SANITARY ENGINEER,
New York City

[In his introduction Dr. Gerhard referred to conditions in the country including a mention that in a southern state 40.2 per cent of farm houses with white tenants and 83.3 per cent of those with negro occupants were without privies and a further statement of the small ratio of farmhouses in general with water piped into the house. Since not only the farmer himself is dependent upon the farm for food supplies, but large urban communities, the sanitation of the farm is very important. Insanitary conditions on the farm may mean a health menace to the distant city. Taking the discussion at this point Dr. Gerhard's own text follows.]

I am convinced that the single vital improvement of running water should always stand at the head of the list of desirable utilities. Its introduction is usually rapidly followed by the installation of a modern kitchen, laundry and bathroom plumbing equipment, including, of course, a boiler for hot-water supply. But all this, in turn, as soon as made available, requires a second sanitary system, namely, a safe disposal of the liquid wastes and of the

excreta, where water closets are introduced. It is in this particular where the laws of health are often violated. Indeed, there are to be found today on improved farms but few examples of model, or even tolerably safe, sanitary waste disposal systems. For the farmer, as a rule, has been indifferent to the need of an adequate sanitary system of disposing of the accumulation of organic refuse, be it in the house, or in the barn, the stable, or the manure heap.

This state of affairs is all the more surprising because there is certainly no lack of sound information on the subject. Nearly every state board of health has, in recent years, issued useful, and in many cases practical, bulletins on the subject, and the many contributions of the United States Public Health Service, of the United States Geological Survey, and of the U. S. Department of Agriculture are too well known to engineers and health officers to necessitate more than a passing mention.

It is perhaps to be regretted that a good many health bulletins contain, along with

sound recommendations, some advice which, to say the least, appears to be of questionable value. I refer in particular to the recommendations of so-called "sanitary privies." Among a score or so of bulletins before me, many of which are listed in the bibliography attached to the Report of the Sewage Disposal Committee, published in November, 1919, in the *American Journal of Public Health*, I can find but few, which do not suggest, or even urge, as a solution of the problem, on those farms where the water-carriage system of plumbing has not yet been introduced, the use of so-called pit privies. These pit privies, styled "sanitary," which they are NOT, are to take the place of the common, objectionable, dangerous and always foul open or surface privies, which pollute the soil and frequently the water in farm wells, and are, therefore, always a menace to health. To my mind the pit privy is a most primitive device, embodying dangerous, because insanitary, features. The only possible good point which may be claimed for it is that it provides a protected place for the deposit and retention of human excreta. An improved construction of the outhouse and its seat render these inaccessible to men's feet, or to the washings from the rain, or to the spread by domestic animals and fowls; they are also protected from flies. In all other respects a pit privy represents an unsafe and undesirable large accumulation of organic matter in a slow process of decomposition or putrefaction. It is, moreover, unsafe because the fluid leachings from it diffuse themselves in the ground and eventually may reach distant wells or springs on neighboring farms or estates. In some geological formations a pit privy is as much of a danger as is the leaching cesspool.

When such a pit has become nearly full, the farmer is advised to fill it up, to cover it with soil, to dig a new pit nearby and to move the privy house over it. It is quite true that in this way the farmer avoids the somewhat objectionable handling of the waste matters which are, for instance, required in the vault privy. But the very cautions recommended in the use of a pit privy, namely, that it should be placed not less than 150 feet (some bulletins say 200 or more) from the well or other source of water supply are, aside from the other reasons mentioned, in my judgment, sufficient to condemn it. For, as a rule, the farm well is located near the farm house, for convenience's sake, hence, if the privy is to be 150 or more feet away from it, its use becomes difficult in

stormy weather or at night time, and postponement to go leads to well-known bodily ailments. The advice of filling up a pit and providing a new one close by, ultimately must lead to a pernicious multiplication of insanitary conditions. Besides, it would seem to me that the filling of the used pit, the digging of a new one, and the repeated removal of the bulky superstructure are bound to cause the farmer more labor and trouble than the simple removal, on a wheelbarrow, of cans, pails or boxes, of the better systems.*

Unprotected receptacle privies and open so-called "sunshine" privies are likewise to be shunned.

The fly-proof vault privy, having a shallow water-tight cemented vault, from which there is no seepage, with well-rounded bottom to facilitate cleaning operations, with tightly-fitting doors giving access to the vault in the rear for cleaning, is somewhat better than the condemned pit privy, but the frequent removal of its contents, necessitated by its shallow depth, is not a job relished by the average farmer.

The importance of the subject must be my excuse for having dealt with it somewhat in detail. Not wishing to appear as indulging in merely destructive criticism, I desire to say a few words about methods of disposal which are really sanitary. Speaking generally, such systems may be divided into dry disposal systems, liquefying or biological systems, chemical systems and finally the water-carriage system.

Of the approved dry systems, mention should first be made of the well-known earth-closet system. This is not at all a new device, for

*After the completion of this discussion the writer received from the U. S. Public Health Service a copy of a "Supplement" to *Public Health Report* of June 18, 1915, entitled, "Resolutions Concerning Disposal of Human Excreta at Unsewered Homes."

These resolutions were adopted in Washington, May 13th, 1915, at a Conference of State and Territorial Authorities. Paragraphs 6, 7, 8 and 9 condemn pit privies and read as follows:

6. "That in advocating privies for use in the disposal of human excreta not only proper construction, but also proper upkeep and proper use of the same, and proper disposal of contents should be urged.

7. "That in general the only types of privy to be recommended as sanitary are those provided with watertight receptacles to receive the excreta, and so constructed that flies cannot have access to the excreta.

8. "That the construction and use of privies such as fly-proof surface privies, unscreened receptacle privies, and the so-called 'pit privies' which may be improvements over existing privies in certain localities, but which can be made to serve the purpose of sanitary privies only under certain conditions of location, season and soil formation, should be suggested only as compromises and with a full presentation of their attendant dangers.

9. "That the so-called 'pit privies' are especially unsuited for use in sections having limestone or marshy soil formation."

the late well-known sanitary engineer, Col. Geo. E. Waring, Jr., became one of its early champions almost fifty years ago. In England its use has been very general in the country districts, where it was found to constitute a perfectly satisfactory substitute for the common privy. Not its least advantage is that it can be attached directly to the dwelling, in a service wing, thereby avoiding the necessity of personal exposure in inclement weather. The U. S. Department of Agriculture recommended its use in 1896 in one of its well-known Farmers' Bulletins. The use of fine sifted and dried loam was advised, the finer the earth, the greater being its capacity for absorption. It is of interest that Dr. Theobald Smith pointed out in this bulletin the use made in parts of Europe of pulverized peat or "peatdust." He strongly recommended the use of peat because of its high absorbing power for liquids, and because it renders a closet practically odorless.

A properly built earth-closet consists of a substantial house, well protected from the weather, with door and windows and ventilators screened against flies, with a wooden or metal receptacle placed under the seat to receive the dejecta and tight-closing doors in the rear, giving access to the receptacle under the seat. By means of suitable handles the boxes can be readily removed when nearly full, to the garden or field, where their contents are emptied into a shallow trench and covered with soil, to which some lime may be added. The removal of the box should take place once a week or oftener, according to the size of the farmer's family. In the closet a box should be available containing dried pulverized earth and a scoop, with which the intelligent user should be admonished to cover the excreta.

The pail privy is really a fly-proof earth-closet, having instead of a wooden box receptacle, pails with handles, or galvanized ash or garbage cans. Such pails or cans are inexpensive, they are watertight, and can be easily removed, when nearly filled, without soiling the hands. Their contents may be spread in shallow trenches, where the top soil and natural bacterial agencies reduce all waste matters to harmless elements beneficial to vegetation.

Personally I cannot at all agree with the following statement, taken from a recent state board of health circular: "The pail privy is very useful under many conditions and when properly looked after, is safe. But the regular removal of its contents is such an unpleasant

task that it is often neglected. Altogether, the pit privy is much more convenient."

In *Public Health Bulletin* No. 37, entitled "The Sanitary Privy," Dr. C. W. Stiles describes and illustrates several styles of pail privies, but carefully avoids mention of any pit or vault privies. In *Public Health Bulletin* No. 68, on "The safe disposal of human excreta at unsewered homes," there is corroboration of my views.

Considering the small initial cost, and the universally good results accomplished by the approved types, it is much to be deplored that comparatively few safe devices are found on American farms. My view is that a well-constructed privy of the receptacle type, properly screened from flies, well ventilated, properly enclosed and properly operated, i. e., used much like an earth-closet, constitutes the best available and most inexpensive sanitary privy. The important point about it is to arrange it so that it can be readily cleaned. The other types are but unsatisfactory makeshifts.

The L. R. S. style of privy belongs to the liquefying vault system, and consists of a concrete water-tight vault, into which some water is poured from time to time, and which is sometimes provided with baffles or partition walls. It is screened from flies, has a seat with tight lid placed over the vault, and has an overflow drain leading the surplus liquid to a tile disposal field. In such vaults the anaërobic bacteria perform a useful function, hence no solid or liquid disinfectants should be added to the contents, as these would kill germ life and retard, if not destroy, the expected liquefaction of the solid excreta. The effluent from such a liquid vault privy is not unlike that from a septic tank, it is not purified and requires further treatment by aerobic bacteria in a nitrifying trench or a system of aerated drain tiles, or a shallow filter bed filled with cinders, coke or gravel.

Such a device obviously requires intelligent use and some attention, and in the northern states it might give trouble from freezing. Several types are manufactured as a commercial article. In point of cost it is more expensive than an earth-closet or a pail privy, and many well-to-do farmers, who can afford its expense, would probably prefer going a step further and introducing a water-flushed indoor closet bowl.

Chemical closets have been introduced in recent years as a commercial article of manufacture. In some types the receptacle contain-

ing the excreta and the chemical is located directly under the seat. In others the seat is connected by a metal tube to an underground rust-proofed metal tank. The chemical used is a caustic liquid intended to sterilize, deodorize and liquefy the solid matters in the tank. Some types, which are in the nature of commodes, and which are intended for indoor use, have a neat appearance and finish. They undoubtedly merit some consideration, but the fact should not be overlooked that the chemical used destroys all bacterial action, and when the contents are emptied or withdrawn, extreme caution is necessary to dispose of them safely and without creating a nuisance.

Incinerator closets, such as suggested in a recent bulletin of the Texas State Board of Health, have some features recommending them for use where an infectious disease occurs. They consist of steel tank commodes, the contents of which are periodically destroyed by fire, without any removal being necessary.

One objection raised against all dry disposal systems is of some moment, i. e., that they require some intelligent supervision, and this, unless a farmer is disposed to exercise it himself, cannot always be relied upon. Hence, where farmers are either unwilling or unable to give the "sanitaries" periodical attention, it is unquestionably better for them in the end to introduce the indoor watercloset system, which is an ideal, though costly, arrangement. Its comfort and convenience are too well known to require at this day any further praise. But if the water-carriage system and modern plumbing are introduced, beware of committing the mistake of using the usual cesspool for the disposal of the liquids. The leaching cesspool always, and the water-tight cesspool at times, are abominations which must not be tolerated.

Kitchen and bath slop wastes, where a dry-closet is used, and the entire house sewage, where there is a complete plumbing system in the house, can be readily and safely disposed of, after treatment in a liquefying or septic tank, either by surface, sub-surface, or intermittent sand filtration.

The popular and widely disseminated idea that a septic or scum tank alone is sufficient to purify sewage so that it may be safely discharged into any ditch, or a stream or body of standing water, should be combated as

entirely erroneous. The septic tank process is only a preliminary treatment, and its effluent being unclarified and foul-smelling, requires further treatment by nitrification or oxidation processes.

More or less complicated disposal devices, such as the Imhoff digesting tank, the contact filter beds, and trickling or sprinkling filters are not well adapted for use on the isolated farm. The available and approved systems have been often and well described. Mention should perhaps be made of the modification, suggested in a bulletin of the Iowa Engineering Experiment Station, on "Sewage Disposal for Village and Rural Houses," published in 1916, of having in connection with the scum or septic tank a small upward sand filter, and of the ingenious plan of a two-story aerobic pebble filter bed, following liquefaction in a septic tank.

Where permanent results and long-continued operation are desired, regardless of an increased initial cost of the system, excellent results have been obtained by me through the introduction between the scum tank and the liquid or dosing chamber of a "cultivation tank" with upward filtration. These were described and illustrated in one of my books, published in 1909.*

The more general use of small concrete slop-water basins for those farm houses which have kitchen plumbing but no water-closet, and the disposal of the kitchen slopwater by sub-surface absorption tiles laid in the garden or the orchard, should be urged as a simple and better method than the one usually practiced by the farmer's wife of emptying out the slops over the surface of the ground immediately about the dwelling.

In conclusion, the fact should be impressed on dwellers in rural districts that, no matter what the disposal of the sewage may be, a certain amount of care in management is required to keep such system in proper working order, and to prevent its becoming a menace to health.

*Gerhard: The Sanitation, Water Supply and Sewage Disposal of Country Houses. pp. 270, 271, 292 and 293. New York: D. Van Nostrand Company. Second Edition.

Note—To avoid misunderstandings it is, perhaps, fair to state that Dr. Gerhard's discussion, presented here somewhat condensed, was written by him without his having seen the report of the Sub-committee on Rural Sanitation. Dr. Gerhard's contemplated prolonged absence from the city compelled him to prepare his contribution to the discussion before the report could reach him.

SINGLE STORY SEPTIC TANK

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New York City

The time allotted me permits no comprehensive review of this compact and meaty report. I confine my comments therefore to one item—the simple, single-story septic tank. I have made this type of sedimentation and digestion unit a subject of special study and experiment for many years, and I believe that it is capable of better things than the report indicates. The drawing shows only its rudimentary form, a rectangular masonry structure, with a trapped inlet pipe, delivering vertically, and a similar trapped outlet pipe at the other end. The inlet pipe, confining the flow to a channel of small section, maintains high velocity, and the jet discharged from it, near the bottom, stirs up what sludge has settled during intervals of quiescence, and prevents the very thing we are trying to induce, undisturbed sedimentation. Moreover the point and direction of discharge leave practically stagnant, and subject to undue detention, the surface water at the inlet end of the tank, and induce special currents with velocity high as compared with that of a uniformly moving vertical cross-section of the whole contents.

Much better than the pipe inlet, I have found the feed-trough of Figure 1 (made of wood if need be, but preferably of asbestos lumber), fed at one end, with a wedge-shaped opening in the floor, 2 inches wide at the inlet and 4 inches at the other end, flanked by a baffle to give a general downward direction to the heavier solids. The wide distribution of the inflow checks velocity and sludge is not seriously disturbed. A variant of this type is shown in Figure 3, where the trough is of concrete, and the baffle of wire glass, set in an angle-iron extending from wall to wall and held at the top by clips fastened to the trough. Occasionally grease accumulates under the troughs and interferes with normal distribution.

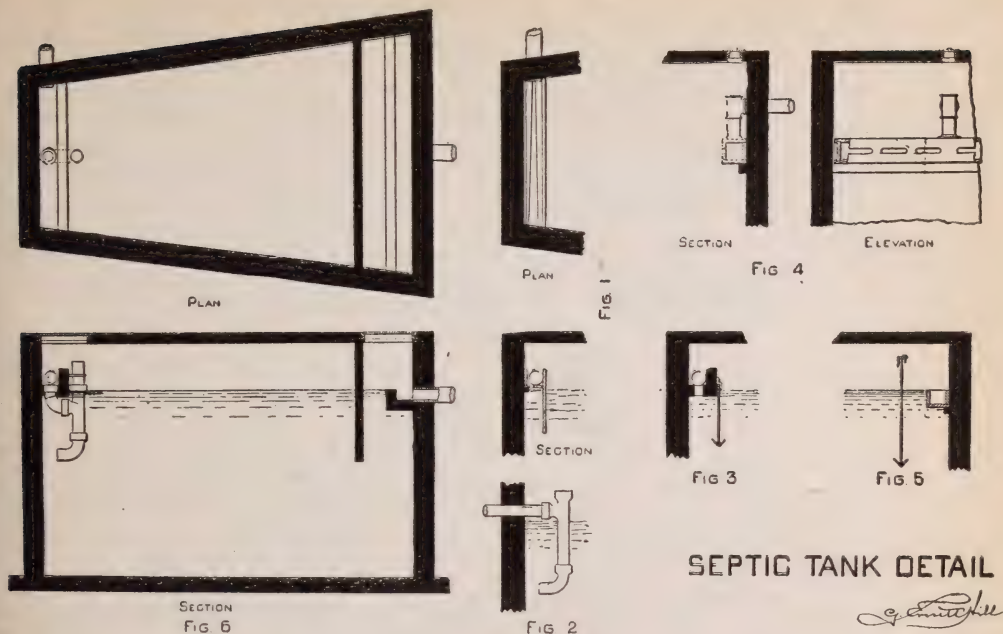
The best feed device I know is the reverting pipe inlet shown in Fig. 6, the result of a long series of experiments with inlets of various types, at different depths, in a glass tank filled with clear water and fed with colored water containing solids of varying sizes and specific gravities. This inlet delivers the flow horizontally against the rear wall of the tank, which acts as a diffusion plate, so that the

liquid is spread almost uniformly over the whole vertical cross-section of the tank before it begins to travel to the outlet. Thus maximum displacement and minimum velocity are secured. (A good idea of the diffusion may be had by standing one foot from a vertical wall and blowing against it, at right angles, a gentle stream of cigar smoke.) Neither sludge nor scum is disturbed by the inflow. In tanks less than 5 feet wide at the inlet end, the simple type shown in Figure 2 may be used. In wider tanks multiple inlets, of the type shown in Figure 6, are desirable.

Experience indicates that in simple septic tanks diverging side-walls are preferable to parallel side-walls. In tests of the two types, side by side, equal in capacity and fed with sewage from the same source, the sedimentation efficiency of the straight-walled tank, was but 82% of that of the radial-walled tank. The reason is obvious. At the wide outlet end of the radial tank, the velocity is markedly lower than the mean velocity, which is the constant velocity of the rectangular tank. Light flocculent particles, which would be carried indefinitely by the mean velocity, settle and remain in the tank; and masses of sludge buoyed by gas, rising near the outlet end, have a better chance to settle again before the outflow point is reached. Moreover, in radial tanks, sludge digestion is more complete; but, as Kipling says, "that is another story," and too long to be told here.

A pipe outlet, like that shown in the drawing accompanying the report, inevitably induces an increase of velocity in the liquid approaching it, carrying forward again particles about to settle and entraining buoyed up sludge. Little of this flow comes from the corners of the outlet end of the tank, and the sewage there is over-detained.

Much better conditions are secured when the effluent escapes in a long thin sheet over a dead level weir-wall extending the whole width of the tank, as shown in Figure 6. Displacement is practically uniform from wall to wall, increase of velocity (until the weir is actually reached) is very slight, and the thin film of water passing over the weir is too shallow to float sludge-masses, which stop when they hit the wall and break up gradually,



escaping in such comminuted form that individual particles are not distinguishable.

Weir outlets must, of course, be protected by scum baffles. I have found wire-glass, held by angle-irons (See Figure 5) admirable for this purpose. It also makes excellent hopper-plates for Imhoff tanks.

Figure 4 shows a simple wooden outlet box, less good than the weir, but still accomplishing the withdrawal of effluent from the whole width of the tank. It is submerged with its slotted openings at the plane of greatest clarity. It needs no scum baffle.

I think it pays to provide a somewhat greater sludge-storage space than is usually allowed, and to clean less frequently. The shorter the

interval between removals, the greater will be the percentage of undigested or partly digested matter to be handled. I have known a yearly cleaning to yield less than 70% of two semi-annual cleanings. Personally I think that the effective depth of a tank should be at least five and a half feet. Less than this either affords too little sludge storage space, or else brings the stratum of moving water too close to the supposedly quiescent strata of sludge and scum.

Is it advisable to include in paragraph B of Section I of the report a provision for chlorination of the effluent? Many of the state authorities are requiring this when potable streams are entered.

EFFLUENTS FROM SMALL IMHOFF TANKS CLOGDOSING DEVICES

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In selecting the type of settling tank to be used with small sewage disposal plants, various factors are considered. The writer's experience would indicate that, when the tank is to be used in connection with a subsequent oxidizing device, the type of tank should be selected with reference to the type of dosing device as well as to the usual considerations.

The effluent from an Imhoff tank treating fresh sewage is not septic and the growths produced by it will clog a small orifice, notch or pipe with such frequency that almost constant attendance is necessary to keep the devices working properly. This is especially true if the Imhoff effluent has an opportunity to absorb air before reaching the device.

In the Public Health Service experiments at Washington* two Imhoff tanks receiving fresh domestic sewage were used, one treating a strong and the other a weak sewage. Either of the effluents when run through a pipe line only partially full or through a dosing chamber covered all submerged surfaces with a layer of slime. This slime broke loose in sections resembling a piece of heavy cloth, both in appearance and ability to clog pipes, orifices and siphons. It was impossible to keep a $\frac{3}{4}$ -inch orifice over a splash plate clean. This was fed directly from the Imhoff tank by a 2-inch pipe flowing partially full. A Taylor nozzle following a dosing tank and siphon would not operate properly through twenty-four hours without cleaning.

Similar difficulties with other dosing and distributing devices using small openings or notches led to the development of the tipper and tapered board distributors, which operated satisfactorily with both effluents. The Imhoff effluents were withdrawn through 2-inch pipes lower than the water levels of the tanks and discharged directly from the raised ends of the 2-inch pipes into the tippers. The absence of air in the pipes prevented them from clogging

*Reported in *Public Health Bulletin* No. 101, "The Treatment of Sewage from Single Houses and Small Communities," by Leslie C. Frank and C. P. Rhynus.

and while slime collected copiously on the tippers, its distribution was sufficiently even to prevent interference with their operation.

The writer believes that if the experiments had been made with a septic effluent from either a septic or biolitic tank, the splash plate or nozzle would have proved satisfactory and the tipper and tapered board distributor would never have been developed. Reports of other investigators working with septic effluents do not indicate any such clogging difficulties as were experienced in Washington.

The floating ball valve was not tried, but it is believed that it would not have proved satisfactory with either of the Imhoff effluents used in the Public Health Service experiments in that sheets of slime would have prevented the ball from seating properly and would have clogged the orifice beneath the ball if the opening was less than two inches in diameter.

These experiments would suggest that an Imhoff tank should not be used in connection with a splash plate, nozzle or floating ball valve unless daily attendance can be relied upon. If these dosing devices must be used, a septic or biolitic tank with a self-cleaning screen at the effluent end would prove more satisfactory under the usual conditions under which small plants are called upon to operate.

REAL NEEDS OF RURAL COMMUNITIES

J. F. JACKSON

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Difficulties in distinguishing between rural and urban sanitation are always present. At first thought, one would naturally conclude that limiting the report to water-carried wastes would fix the line of division, but when one endeavors to apply the recommendations to the problems local to each particular state, the variation soon becomes apparent.

In Connecticut, only 56 of the 168 towns have even a primitive sewerage system. Rural sanitation, excluding from the discussion, localities served by sanitary privies with either the vault or can system and institutions using chemical toilets, is related to such treatment as will permit of the discharge into a stream not used as a source of water or ice supply. Where such a stream is not available and where soil conditions are favorable, some form

of sub-surface disposal is desirable. Except with well managed, private estates and institutions, any other than the simplest method of treatment is inadvisable. Proper attention is hard to get, and methods with mechanical equipment often hold back necessary improvements in sanitary conditions. If we cannot, under present conditions, obtain proper operation of small septic or Imhoff tank units or plain sand filters, by communities where the number of the population warrants the assumption that the plant will receive some attention, what hope is there of efficient operation of methods of treatment such as sprinkling filters, where daily supervision, at least, is required?

To communities, state health bodies and laymen with some scientific training, the re-

port will be very welcome because it puts in a concise form, and displays in a readily understandable way, present-day practice in treatment of water-borne wastes. It is my opinion, however, that what rural communities need is—

Firstly: Education in the necessity of some definite plan of sewerage.

Secondly: Financial assistance to plan and construct it.

Thirdly: Until they are able to obtain such assistance, some simple method of disposal which does not require skilled operation, which can be installed cheaply, and the results from which can be quickly demonstrated to the everyday farmer.

LIST OF NEW MEMBERS

Proposed for Election to the

A. P. H. A.

April 1 to April 30, 1921, inclusive.

Names of Sponsors are set in **Bold Face Type**.

Names of New Members are set in **Light Face Type**.

CONNECTICUT

John T. Black, M. D., Hartford.
Benjamin N. Pennell, D. V. S., Health Officer,
New London.

DISTRICT OF COLUMBIA

John Ritchie, Jr., Boston, Mass.
Harry H. Moore, U. S. P. H. S., Washington,
D. C.

FLORIDA

John Ritchie, Jr., Boston, Mass.
John H. Mills, M. D., 907 17th Avenue, Tampa.

ILLINOIS

John Ritchie, Jr., Boston, Mass.
A. E. Campbell, M. D., Supt. of Health,
Springfield.

MAINE

John Ritchie, Jr., Boston, Mass.
Mrs. Howard R. Ives, Pres., Baby Hygiene and
Child Welfare, Portland.

MARYLAND

John Ritchie, Jr., Boston, Mass.
Albert J. Bossyns, M. D., Medical Examiner
Baltimore and Ohio Railroad Company, Balti-
more.

R. A. Bolt, M. D., Baltimore.
Gertrude E. Knipp, Exec. Sec'y, American
Child Hygiene Association, Baltimore.

R. A. Bolt, M. D., Baltimore.
Philip Van Ingen, M. D., New York City.
Harriet L. Leete, R. N., Field Dir., American
Child Hygiene Association, Baltimore.

MASSACHUSETTS

S. H. Stone, Boston.
Horace Morison, Exec. Sec'y, Boston Health
League, Boston.

Prof. Samuel P. Prescott, Cambridge.
Charles E. Bell, student, 1647 Beacon St.,
Brookline.

MICHIGAN

E. G. Norman, M. D., Battle Creek.
M. S. Tarpinian, Detroit.
Emma Francis, Head of Nutrition Dept., Bat-
tle Creek Sanitarium, Battle Creek.

MISSOURI

**C. F. Knight, P. A. Surgeon, U. S. P. H. S., Jef-
ferson City.**
Viola Russell, M. D., A. A. Surgeon, U. S. P.
H. S., Jefferson City.

NEBRASKA

Prof. C. E. Turner, Cambridge, Mass.
Fred Marion Gregg, Teacher of Psychology and
School Hygiene, University Place.

NEW JERSEY

John Ritchie, Jr., Boston, Mass.
Richard C. Smith, Chemist, Glen Ridge.

NEW MEXICO

C. E. Waller, Santa Fe.
J. F. Docherty, Health Officer, Albuquerque.

NEW YORK

John A. Conway, M. D., Howell.
D. W. Hardy, M. D., Health Officer, Endicott.
A. W. Hedrich, Boston, Mass.
Mary M. Crawford, M. D., New York City.
John Ritchie, Jr., Boston, Mass.
Louise D. Larimore, M. D., New York City.

OHIO

John Ritchie, Jr., Boston, Mass.
L. Bigler, M. D., Gettysburg.
Prof. H. R. Eggleston, Marietta.
Mary E. Pape, Teacher of Biology, Marietta
High School, Marietta.
Wanda Przyluska, R. N., Columbus.
Nancy Folsom, Home Demonstration Agent of
Huron County, Norwalk.
John Ritchie, Jr., Boston, Mass.
F. R. Dow, M. D., Health Commissioner, St.
Clairsville.

PENNSYLVANIA

A. W. Hedrich, Boston, Mass.
Shem A. Everett, M. D., Physician and Sur-
geon, Freeland.

SOUTH DAKOTA

John Ritchie, Jr., Boston, Mass.
W. M. Barnes, M. D., Director, City Health
Dept., Sioux Falls.

TEXAS

John Ritchie, Jr., Boston, Mass.
A. H. Flickwir, M. D., Health Officer, Houston.

VIRGINIA

John Ritchie, Jr., Boston, Mass.
Arlington County Health Dept., Clarendon.

MEXICO

W. A. Evans, M. D., Chicago, Ill.
A. Brioso Vascencelos, M. D., Supreme Board
of Health Member, Mexico.

PHILIPPINE ISLANDS

John Ritchie, Jr., Boston, Mass.
Manuel Manosa, Asst. Eng. Philippine Health
Service, Manila.
Jacobo Fajardo, Chief of Division, Philippine
Health Service, Zamboanga.

Are you planning to take a friend when you go to the Fifteenth Annual Meeting of the A. P. H. A. in New York City, November 14-18, 1921, and nominate him for membership?

EMPLOYMENT BUREAU

HELP WANTED

Help wanted announcements will be carried free in this column until further notice. Copy goes to the printer on the 10th of each month for publication on the 20th. Mail to Boston office as early as possible.

In answering keyed advertisements, please mail replies separately to editorial office in Boston, Mass. In replying give age, professional training, salary requirements, previous positions held and three or more references.

Wanted: By a local Red Cross chapter in New Jersey, a district public health nurse, salary to start \$1,500, with early increase if satisfactory. Address 442, L. B. H., care of this JOURNAL, Boston address.

Wanted: Health Officer—an experienced man in Public Health administrative work. Must also be competent and willing to personally conduct Infant Welfare Clinics and Tuberculosis Clinics in connection with County and City Health Centers. The plan under which applicant is to work is a coöperative County-City Health Department located in a progressive northwestern city of 25,000 population, and a county population of 20,000, U. S. Public Health Service coöperating. Salary \$5,000 per annum. An excellent opportunity for the right man. Position open August 15 or earlier. References including name, age, and past experience in Public Health work required. Address Dr. F. T. Foard, U. S. Public Health Service, Great Falls, Montana.

Wanted: Chief Food Inspector. Must be a veterinarian who is qualified to do meat and milk inspection. Salary \$2,640 per annum. Apply to Dr. L. J. Roper, Director of Public Welfare, Portsmouth, Virginia.

Wanted: Laboratory Technician to work in a group in a southern city of 50,000. Six men in the group, and six associates. Clinic and hospital of 26 beds with operating pavilion, etc.; is owned and will be operated by this group when completed. Technician must be thoroughly capable in blood, cultures, and tissue work as well as routine. Salary in accord with capabilities. Address 445, P. M., care of this JOURNAL, Boston address.

POSITIONS WANTED

Positions wanted announcements will henceforth be carried in this column. The

charge is \$2 per insertion. Copy should be received at this office by the 10th of the month.

Physician trained in public health, in physical education and child hygiene, with an excellent experience as a practitioner, teacher, and research worker, would accept position with school or with an industrial institution. Salary would depend on time to be given to work. Address 155, R. M. D., care of this JOURNAL, Boston address.

Health Officer—Ten years' general medical practice with part-time health work, followed by three years' executive and administrative state health department work. At present student Harvard-Technology School for Public Health Officers, Class 1920-21. Available June 1st. Administrative work preferred. Address 154, H. E. H., care of this JOURNAL, Boston address.

Public Health Child Hygiene Director is available for the months of July and August, for organization, surveys, lectures, educational propaganda, supervision and all other forms of child hygiene programs. Energy, personality and wide experience in this field in several large cities, with state and city departments of health and educational, medical colleges and hospitals. At present Medical Director of Public Schools in city of 120,000. Full particulars or interview on request. Address 156, W. A. R., care of this JOURNAL, Boston address.

Wanted: University position. Eight years teaching experience in all phases of bacteriological work in state universities. Experienced in research work. Qualified in all branches of bacteriological work. Position with future desired. Minimum initial salary \$3,000. Address 157, M. J. T., care of this JOURNAL, Boston address.

A physician, experienced in city and county public health work, administrative and clinical, with a working knowledge of sanitary engineering, now a field agent, U. S. P. H. S., will be open for engagement as city or city-county health officer August 15 or sooner. Can furnish references from state and federal authorities. Engagement with organization coöperating with U. S. P. H. S. preferred. Address 158, D. J. N., care of this JOURNAL, Boston address.

PUBLIC HEALTH NOTES

Abstracts by D. GREENBERG, M. P. HORWOOD, JAMES A. TOBEY and HOMER N. CALVER.

Demonstration of the National Child Health Council.—Notice has already been published concerning the proposed demonstration by this council, and further preliminary facts have recently been made. It is intended to assist some American community of between 20,000 and 30,000 of population and the surrounding county in securing conditions as nearly ideal as possible for the development of its children.

The first step will be the selection of the community, in which the demonstration is to be continued during five years. The Council has not imposed any geographical limitations, but believes that the following qualifications on the part of the community will be essential for the success of the experiment.

The town or city should be in a county of about 60,000 of population, stable, of average age distribution, and without strikingly predominant racial stocks. There should be a normal percentage of the population engaged in manufacturing and in a variety of industries. The surrounding country should be agricultural. The town should be in a birth registration state, the health conditions should not be abnormally good or bad, the mortality of children should not be abnormal and the health administration should be reasonably good.

Clarence King, holding degrees from the Universities of Columbia and Wisconsin, is to be director of this novel health experiment.

The committee which will recommend the town to be chosen for the experiment consists of Dr. Richard A. Bolt of Baltimore, General Director of the American Child Hygiene Association; Miss Ella Phillips Crandall of New York, formerly Director of the National Organization for Public Health Nursing; Dr. Charles J. Hatfield, New York, Director, National Tuberculosis Association; Owen R. Lovejoy, New York, General Director, National Child Labor Committee; Miss Sally Lucas Jean, of New York, Director, Child Health Organization; Dr. Haven Emerson, former Health Commissioner of New York, and Dr. Donald B. Armstrong of Framingham, Mass. ♣

Heredity and Tuberculosis.—Dr. Raymond Pearl has published some suggestive

figures dealing with the problem of infection and heredity in relation to tuberculosis. He has investigated 57 family histories, involving more than 5,000 blood relatives. In 38 cases the original subject of investigation was tuberculous, and in 19 cases non-tuberculous. Each group could be regarded as a random sample of the working-class population of Baltimore, the only differential factor in the selection being that in the one case the individual with whom a history started was tuberculous, and in the other case not. Five generations were studied with the following striking results. A tuberculous person, it was found, had nearly six times as many tuberculous blood relatives as a non-tuberculous person. In other words, 7 per cent of the blood relatives of a tuberculous person were themselves tuberculous, whereas this was the case with only 1.2 per cent for the non-tuberculous. Where there was no immediate tuberculous ancestry (parents and grandparents non-tuberculous) 7.4 per cent of the offspring were actively tuberculous. Nearly a quarter (22.2 per cent) of these tuberculous progeny were known to have lived for some time before developing the disease in close contact with cases of active tuberculosis. On the other hand, of the 92.6 per cent non-tuberculous offspring of non-tuberculous ancestry, only about one-tenth (11.2 per cent) had been in close contact with an active case. Thus twice as many of the tuberculous offspring of non-tuberculous ancestry had been in close contact with active tuberculosis, as had been the case with the non-tuberculous offspring of non-tuberculous ancestry. These figures stress the importance of infection. But, as Dr. Pearl points out, when one or both of the parents were actively tuberculous virtually three-fourths of their non-tuberculous offspring had been in just as close contact with active, open cases as their brothers and sisters who developed the disease. Dr. Pearl's figures show that familial contact with active, open cases is undoubtedly a factor in determining the incidence-rate of clinically active tuberculosis, but he thinks it equally obvious that such contact does certainly not account for the whole, and it probably accounts only for a

small part, of the increase in the incidence of the disease occurring as the amount of tuberculosis in the immediate direct ancestry increases.—R. Pearl, *Amer. Rev. of Tub.*, Nov., 1920, 688.—(D. G.)



Segregation of School Children With Heart Disease.—The author in the present study gives a definite answer to the mooted question as to what can be accomplished by segregating children with cardiac disease in special classes. He compared a cardiac class of 24 children with a control group of cardiacs who came to the clinic. The results are really remarkable. All these children had in the past been compelled to spend from 2 weeks to 3 months during every school year either in bed or in the hospital. Of the 24 children in the cardiac school, 21 did not lose a single day, this being the first time in their entire school life that they were able to be continuously present. Of the control children, 8 had a good attendance record, 6 developed such marked decompensation that they had to be admitted to the hospital for an average stay of 8 weeks, and the remaining 10 were frequently compelled to stay at home with slight decompensation, attacks of rheumatism and tonsillitis. The weight records are interesting. Of the controls 5 showed an average loss of 7 pounds for the year; the other 19 gained an average of 2 pounds. In the cardiac class every child gained weight, the average increase being 9 pounds. The cardiac class, of course, had certain advantages which the control group lacked. The cases of mitral insufficiency and stenosis were transported to and from school by a bus while the controls had to walk. None of the cardiac class were allowed to go home for lunch, but received their meal at the school, the diet being selected by the supervisor. These children also had a rest period during the noon hour and cots and blankets were provided. In conclusion the author states that taking all things into consideration, the establishment of a special class for cardiac children has distinct advantages—the segregated cases attend school without any undue absences, the hospital days are proportionally less, the children develop better, their physical condition shows marked improvement, the weight curve being especially encouraging.—W. F. Bopp, *Archives of Pediatrics*, Feb., 1921, 86.—(D. G.)

Spleen Examination.—Over 1,200 school children, all boys attending school in Mitchell county, Ga., were examined in the spring of 1921, most of them during February. In 2.1% the spleen was positive, usually being just palpable, though in a few instances the enlargement reached one or two fingers' breadth. Eight hundred and sixty-five white boys gave a percentage of 2% while 396 colored boys gave 2.5%. Blood examinations were also made in some cases, though not on the entire series. The parasite index was low. The authors point out that all of the schools examined are situated in a region where quinine treatment and quinine prophylaxis were conducted last summer. The principal object in making the spleen examination at the time chosen was to ascertain the minimum rate as a basis for comparison with the rate occurring at the height of the malaria season.—Barber and Coogle, *U. S. P. H. Reports*, Vol. 36, No. 14.



Protection Against Syphilis.—The world needs to block the extension of syphilis and to vanquish the infectious germs wherever found. For this, Vernes suggests the use of his recently completed colorimetric scale by which precise measurement of the infection is possible. This means of measuring requires two conditions: precision on the part of the manipulators and speed of work to allow of the taking of a great number of serological observations in a minimum of time. The equipment necessary is not more difficult to realize than that of sterilization in surgery; moreover, it is economical, for there is nothing for public health purposes whose expense is better justified by the resulting economy of time and personnel. Thus equipped, the laboratory becomes the headquarters of treatment. The whole organization circles about the patient, carrying the graphic measure of his infection. This instills the patient with confidence and he is induced to return for future care and observation. Other requisites are: anxiety on the part of the attendant to spare the patient pain, to save time, and to take an interest in his moral well-being. Observations during the past ten years have shown that patients treated by this method which Vernes calls "syphilimetry," are not susceptible to new infection with syphilis and are sure of not transmitting it to their offspring.—Vernes. *Int. Jour. of Public Health*, Vol. II, No. 2.—(A. N. T.)

Archives of Dermatology and Syphilology for March, 1921, has an interesting and valuable article by Drs. Udo J. Wile and C. H. Marshall. It is the study of one thousand eight hundred and sixty-nine cases of syphilis in all stages. The routine lumbar punctures have been carried out upon these patients and the associated findings have been carefully studied. This number is about one-third of the total number of cases seen. They have been selected particularly with reference to correct diagnosis and have been accurately observed over a definite period of time.

As a result of this study the authors made the following conclusions:

1. The nervous system, if uninvolved as shown by the accepted criteria during the first months of infection, is seldom invaded later. A negative preliminary puncture followed by positive findings at a later date occurred in only three of several thousand cases punctured.
2. Of the several criteria indicating involvement, the increase of organic solids is found to be slightly higher than either the cell count or the Wassermann reaction, the relative value being indicated in the order just mentioned.
3. A considerable degree of cerebrospinal involvement may be present in the latent period of syphilis without manifesting any signs or symptoms.
4. Such asymptomatic cases may become symptomatic later, and a study of the colloidal gold curve in these cases is of some value in estimating the ultimate prognosis of the case.
5. Comparing the large number of cases of primary and secondary syphilis in which positive findings are found, with the relatively small percentage of late neurosyphilis as compared to total syphilitic incidence, we must conclude that a large number of early cases are in the nature of a miningal roseola, which is transitory in its clinical aspects.
6. The interpretation of the lumbar puncture findings, particularly early in the incidence of the disease, constitutes a valuable guide in estimating the ultimate prognosis of the disease with regard to the integrity of the nervous system.—(A. N. T.)



Newer Aspects of Some Nutritional Disorders.—Hess reviews current views on vitamins and their relation to nutritional disorders, especially scurvy and rickets. Speaking of the use of cod liver oil in the treatment of rickets, he says: "It is recognized as a drug which benefits nutrition, but the fact that it

has unequaled value in the prevention and cure of rickets is hardly realized." It is possible to rid any locality of rickets by means of the use of cod liver oil. There are approximately 125,000 children in New York City between the ages of 3 and 15 months, the period of greatest susceptibility to rickets. If we estimate generally that the families of one-third to one-quarter of these children are unable to purchase cod liver oil, and if we agree that the development of rickets may be prevented by giving a teaspoonful three times a day, then, at the present cost, rickets could be practically abolished in this city by the expenditure of about \$150,000 a year. This is merely one of many instances in which the community does not get the full benefit of medical knowledge. Studies of the deficiency diseases have served to illustrate in a most convincing manner the intimate relationship of nutrition to infection, and have led to attributing increased significance to the former. Indeed, the chief clinical importance of disorders of nutrition seems to be associated with the fact that they bring about an abnormal condition of the tissues which renders them more susceptible to the invasion of bacteria or their products. Veterinarians and farmers are well aware that faulty nutrition leads to fatal infections. This "nutritional-infectious" aspect has been convincingly illustrated on a large scale among the peoples of the Central Empires, who during the many years of the war suffered from various forms of malnutrition. The general impairment of health was most strikingly manifested both in adults and in children by the great spread of tuberculosis and its increased mortality.—A. F. Hess, *Jour. A. M. A.*, March 12, 1921.—(D. G.)



Many Child Deaths in Russia and Roumania.—According to information from the Lettish Red Cross, child mortality in Petrograd during the winter months has been the heaviest in the history of the city. In certain districts the proportion of child deaths has been nine deaths to every ten births. The conditions of malnutrition are largely responsible for the appalling death rate among infants.

Twenty children out of every hundred die in Roumania before reaching the age of one year and fifty per cent die before reaching five years, according to recent statistical reports.—(J. A. T.)

STATE HEALTH NOTES— LEGISLATION

France.—A bill providing measures intended to increase the birth rate and improve the health of French children was introduced on December 2, 1920, by a group of deputies, among them Prof. Pinard, famous for his infant welfare work. Generous benefits are provided during the last four months of pregnancy and the first year of the child's life, the benefits being higher if the mother nurses the child, and still higher if she is a widow or unmarried. During the time the benefits are being paid, the mother and child are to be under the supervision of an office for mother and infant protection, to be established in each commune. Welfare visitors will have supervision over every child from 1 to 3 years old, at which age the children enter the *école maternelle*, where the supervision is continued.

The bill also provides for daily cash benefits for every child over 1 and under 13 years of age who is motherless, or the child of a widow or unmarried mother.—*Journal Officiel, Doc. Parl. Ch. 1920, No. 1730, pp. 347-356. (J. A. T.)*



Delaware.—The following health bills were passed during the last session of the Delaware Legislature:

1. Increasing the appropriation for child welfare work from \$25,000 to \$60,000.

2. Increasing the appropriation for the control of tuberculosis from \$30,000 to \$55,000.

3. Providing for the free distribution of diphtheria antitoxin and for free distribution of material for making the Schick Test and immunizing with toxin antitoxin.

4. Providing for the employment of a nurse to supervise and educate the midwives of the state.

5. Providing that a physician shall certify as to the cause of death in all Coroner cases.

No appropriations for health work were reduced.



Florida.—The Florida State Board of Health has adopted a set of regulations governing the operation of swimming pools, which embodies the general principle of the legislative act of 1919 of the State. These regulations insist that the water in the pool

shall have a sanitary quality acceptable to the State Board of Health. For flowing pools 400 gallons per person per day is the minimum. Fill and draw pools shall be emptied and thoroughly cleaned at least once each week. Such pools shall also be disinfected by an approved method daily between the cleansing periods. The capacity of pools is established by the regulation, as is the color of the water and the necessity for a light colored surface for the underwater portions of the pool, which must be smooth and easily cleansed. The floor shall not have a slope of more than one foot in fifteen, and depth of the diving stands and spring boards shall not be less than seven feet. The depth of the water must be marked frequently at intervals along the side of the end walls. The pool must be surrounded by a raised concrete curb at least two inches high and twelve inches wide, serving as a clean space and a check against floor drainage. All walks and areas surrounding the pool shall be at least five feet wide and sloped to properly located drains. Scum and overflow gutters shall be provided on all pools.

There are regulations with reference to dressing rooms, their arrangement with regard to the pool, the necessity for all persons taking a shower bath before entering the pool water, the entrance to be through the shower room. Further provisions are made with reference to sanitaries, drinking fountains, bathing suits, disinfectants. Persons having communicable diseases shall not be permitted to use any swimming pool.



Illinois.—The State Department of Public Health has drafted and introduced into the legislature a bill that provides for the employment of full-time medical health officers by every county in the State. It is felt that for Illinois the county is the logical and most practical unit around which to build up an efficient local public health administration.



Massachusetts.—The anti-vaccination bill permitting children to go to school without the necessity for giving evidences of successful vaccination, which was passed by the Senate, was defeated in the House by a vote of 100 to 21. The bill providing for physical training in the public schools has been greatly

limited in scope by being resolved into the mere addition of the words, "indoor and outdoor games and athletic exercises" to the law as it now stands relating to the subjects to be taught in the public schools.



Minnesota.—The legislature has recently passed a bill authorizing the issue of a million dollars in bonds for enlarging Glen Lake (Hennepin County) Tuberculosis Sanatorium, to take care of 300 additional patients. This sum is to be devoted to construction, the equipment being cared for out of current taxation. Since the passage of the bill was assured plans are well in hand and include an infirmary for men and one for women to be the wings of a central administration building, a dining room and recreation building, a nurse's home, a building for the men employees, a physicians' building, a superintendent's residence and a new heat generating plant.



Ohio.—The Administrative Reorganization bill, House bill No. 249, is of great importance to the health interests of the state. It was introduced February 24 by Mr. Dunn of Bowling Green, amended and reprinted March 16, and passed as an emergency measure the next day. The Senate received it March 21 and reported it amended to the House on April 1. The Senate passed the bill as an emergency measure April 7. It affects all departments of the state, creating nine major departments, the directors of which are to be appointed by the Governor and to serve at his pleasure.

Since it affects the health interests of the state the bill was vigorously opposed by the Ohio Public Health Federation, which was able to secure various amendments but was not able to omit the provision of appointment by the Governor.

The bill provides that it shall become a law on July 1, 1921, although the emergency clause would provide for its becoming a law immediately upon final passage. Such a law carries the power to undo all the constructive health work accomplished in Ohio during the past 35 years.

It is expected that suit will be brought in the Supreme Court to test the right of the legislature to make the bill an emer-

gency measure and thus prevent a referendum on it.

With reference to chiropractors, before the convening of the 84th General Assembly the Ohio Public Health Association prepared and distributed a pamphlet fully covering the chiropractic situation as it exists in Ohio. On January 4, the initiated bill to establish a Chiropractic Board to examine and license practitioners of chiropractic was introduced and became known as H. B. No. 13. The House Committee on Public Health reported the bill on February 15th, with a recommendation that it be indefinitely postponed, and the House accepted the recommendation. A new bill was introduced in the Senate on March 15 by Senator Endley of Mansfield. The bill was referred to the Committee on Public Health where it was voted to indefinitely postpone action on the bill. On March 31st Senator Endley moved that the Committee on Public Health be relieved of the bill and that the bill be placed upon the Calendar for third reading. His motion was defeated. This probably ends the efforts of the chiropractors at this session of the legislature. The State Supreme Court is to hand down a decision on their legal status in Ohio under the Platt-Ellis law.

A number of attempts have been made this year to amend the Hughes-Griswold law by writing in the salary to be paid district health commissioners. No legislation ensued and none is likely to be passed this session.

Other health bills on the Ohio calendar are: To prevent pollution of waters in the State; to transfer some duties from Ohio Commission for the Blind to State Commissioner of Health; to provide for keeping a record of births and deaths in the probate court; to amend tuberculosis hospital law; to curb the spread of tuberculosis; to amend state sanatorium law; to extend benefits of workmen's compensation so as to include occupational diseases; to provide state supervisory control of public water supplies; to amend state sanatorium law.



Oklahoma.—The eighth legislature, while in regular session, passed a law for the prevention of blindness from ophthalmia neonatorum with the "Religious objections" clause attached.

Tennessee.—The General Assembly of Tennessee has enacted a number of laws this season. One of these enables counties to establish county departments of health with full-time county health officers, sanitary inspectors, public health nurses and necessary clerical assistants. This law also provides that municipalities within counties establishing such departments may coöperate, so that one health department in a county may serve for the county and all the municipalities located within it.

Another law authorizes counties to appropriate money to be used in coöperation with the State Board of Health for the purpose of making demonstrations.

A venereal disease control law was passed April 9, 1921.



Texas.—The 37th Legislature has passed a bill carrying an appropriation of \$300,000 for the purpose of constructing and equipping a hospital in Texas for the care of negroes suffering from tuberculosis. Till now there has not been a single bed available for this purpose.



Saskatchewan.—In this province of the Northwest regulations have recently been passed governing private hospitals, maternity homes, foundling homes and similar institutions. These regulations provide for thorough inspection by the Commissioner of Public Health, and also stipulates that all such institutions shall be licensed, after particulars regarding the nature of the building, person in charge, qualifications, etc., have been furnished.



STATE HEALTH NOTES— GENERAL

England.—The International Union against Tuberculosis is to hold its conference in London, England, from Tuesday, July 26, till Thursday, July 28. This will be open to members of the International Union and to delegates from countries within the League of Nations and from the United States of America. It is expected that the opening address will be by the retiring President of the Union, M. Léon Bourgeois, President of the French Senate. He is to be succeeded by Professor Sir Robert Philip of the University of Edinburgh. The principal subjects proposed for discussion are: "Modes of Diffusion of Tuberculosis

Through the Races of the World," to be opened by Professor Calmette, and "The Role of the Medical Profession in the Prevention of Tuberculosis. Professor Léon Bernard of the University of Paris is Secretary of the International Union. The meeting will be held under the auspices of the (English) National Association for the Prevention of Tuberculosis.



National.—Women and Public Welfare.

—The General Federation of Women's Clubs, of which Mrs. Thomas G. Winter of Minneapolis is President, has a department of Public Welfare under the chairmanship of Mrs. Elmer Blair of New York City. It is an ambitious program that the Federation's department issues in its suggestions to its three divisions, those of child welfare, health and industrial and social conditions.

Under the first division, that of child welfare, are three leading suggestions, public protection of maternity and infancy, universal child health, and abolition of child labor. In the matter of maternity care and infant welfare, the suggestions are made of a united position of women with reference to maternity legislation, and information with reference to best methods of establishing and administering child health centers, which will serve to lower the mortality rate of mothers and infants. With reference to children of school age, the weighing and measuring movement is to be supported, while the child in industry should be protected by laws placing the responsibility for such protection.

The slogan of the Division of Health of the Federation is, "A national department of health and a high moral standard, the same for men as for women." In this division are committees on tuberculosis, and for coöperation with the Women's Foundation for Health, some of the objects of which are a new constructive conception of health, the value of the health inventory and the campaign for correct health posture and for approved shoes. A committee on occupational therapy discusses in practical ways employment for the sick during convalescence, while that on public health nursing seeks to demonstrate still further the value of this very useful aid to health, to educate the public to the need for public health nurses and to secure definite official

recognition of the nurse. Two other committees are there in this great organization, one on social hygiene, coöperating with the great national agencies, and one on institutional relations.



The U. S. Public Health Service has for several years been studying occupational diseases and hazards with the sole view of reducing them in the interest of both working man and employer. It has already succeeded in doing this for many of them. But many more remain to be studied; and to do this effectively periodic physical examinations of the workers are necessary.

Many manufacturers and workers already understand this and are glad to coöperate with the Service in making the plants safer and more healthful. Some manufacturers, however, are suspicious; they fear that the "radicals" are seeking to spy out something that will make trouble for them. Some workers, too, are suspicious; they fear that any defects discovered will be reported to their employers, and will lose them their jobs. Consequently one or both sides actively or passively resist inspection and physical examination, not realizing that undiscovered defects in either plant or man will surely lead sooner or later to serious trouble, for which plant or man must pay, the plant in money and the man too often in health or life.



"The prevention and correction of mental defectiveness," says the U. S. Public Health Service, "is one of the great public health problems of today. Its influence is continually cropping out. For instance, recent studies have shown that feeble mindedness is an important factor in prostitution, and that a marked proportion of juvenile delinquency is traceable to some degree of mental deficiency in the offender."

A recent state-wide survey in Oregon shows that more than 75,000 men, women and children out of a total population of 783,000 are dependents, delinquents, or feeble minded, and that more than 500 school children out of a total enrolled school population of 32,500 are more or less, mentally deficient. The latter fact is significant when it is remembered that the condition of the children of today is the best possible

index to the condition of the community of tomorrow.

The Oregon figures are considerably lower than the average shown by the draft examination, indicating that they are certainly not higher than those that would be obtained in other states.



The U. S. Children's Bureau recently coöperated with the University of North Carolina in the giving of a short course in Community Child Health in the School of Public Welfare. This course was conducted by Dr. Frances Sage Bradley.



That fewer men lost their lives in metal-mine accidents in this country during 1919 than in any previous year, for which statistics have been compiled, is shown in a report just issued by the United States Bureau of Mines. The number of men killed was 468 as compared with 646 killed in 1918. The number of men injured was 31,506 as compared with 42,915 injured in 1918.

The fatality rate was the lowest on record for the metal mining industry in the United States, and the injury rate was lower than any year since 1914.

Copies of Technical Paper 286, *Metal-Mine Accidents During the Calendar Year 1919*, by William W. Adams, mine statistician, may be obtained by addressing the Director of the Bureau of Mines, Washington, D. C.



Canal Zone.—In clearing a place to the east of Miraflores Locks, in the Canal Zone, the scrub of the jungle was found to contain many rats and several hundred were killed each day by the men making the clearing. The possibilities of introduction of plague have been considered by the Health Department, which is making examinations of the rats and requesting those who trap or kill rats to send them or their carcasses to the Health Department for examination.

A study of the cases of malaria in the Canal Zone shows a gratifying reduction in the incidence of the disease. In 1919 there were 2,114 cases against 1,221 in 1920. Anti-fly breeding measures are a part of the health program, and it is worthy of notice that the scarcity of flies in the Zone is frequently a subject of comment from visitors.

Colorado.—The Colorado Health Department announces an increased appropriation for all divisions of the department. The State Board is establishing a new laboratory.

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Illinois.—April 17-23 was set aside for Health Promotion Week throughout the state.

A recent epidemiological investigation made by the State Department of Public Health into a typhoid fever situation at Charleston disclosed two definite points of infection. Of the six cases of typhoid reported, one was traced directly to a carrier, two to an area infected with sewage, and the other three appeared to have been contracted out of town.

The victim of the carrier was a child whose mother had been down with typhoid five years before. A laboratory examination of feces from the mother showed her to be an active carrier although she apparently enjoyed good health.

The case history of two boys showed that previous to the typhoid incubation period they had used for a playground an area into which a private sewer from a nearby house emptied. Further investigation disclosed the presence of a convalescing typhoid patient in the house. The boys had dug trenches in the sewage-infected area while playing soldier. Evidence clearly established the playground as the point of infection.

During the investigation it was brought out that a woman with a typhoid fever history, who had never undergone proper examination subsequent to recovery to determine her status as a possible carrier, was dealing out milk to school children. While none of the six cases was traceable to this woman still the danger of handling milk (or any other food product) after recovery from typhoid and without examination, is apparent.

Illinois has just completed a state-wide survey of the health centers, of which there are 42 in the state, undertaken by the Division of Child Hygiene of the State Department of Health.

Records show that more than 6,000 prenatal, pre-school and infant cases have received attention through these Health Centers. The survey showed also that a goodly number of communities maintain public health nursing services where the regulation Health Center has not been es-

tablished. The work in each instance, however, appears to be substantially the same.

A significant feature of two all-day teaching clinics on tuberculosis that were recently held at Anna and Chester, was the attendance of the superintendents and the teachers of the local public schools. In each instance the interest of the teachers was voluntary and at Anna the superintendent dismissed school at an early hour in order to facilitate the attendance. Those in charge of the clinics gave special talks on undernourished and tuberculous children, and called attention particularly to the value of early treatment in such cases. The clinics were held under the joint auspices of the local medical and tuberculosis societies, and were under the charge of officers from the Illinois Tuberculosis Association.

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Maine.—The executive quarters of the Maine State Board of Health have been removed to the State House although the laboratories and the various division offices remain in the old health building within the State Hospital Grounds, at considerable distance. The change is for the purpose of getting the heads of departments in closer touch one with another.

Dr. L. B. Bristol, State Health Commissioner, realizes that Maine is a vacation and health resort and is taking especial pains to have the conditions of living and the sanitation such as to justify the fame of the state. Some paragraphs from a recent article from his pen illustrate the appreciation of his department of the needs and requirements:

"As Maine waters are stocked with fish, so the entire state is stocked with health. Health hunting in Maine is a popular and profitable pastime.

"Maine entertained over 600,000 summer guests in 1919, receiving an income of approximately \$30,000,000 from this source. Is it not reasonable to assume that as a state she is doing everything possible to promote and to conserve one of her chief sources of income?

"The filthy fly has been declared an outlaw in Maine. A recent decision by a justice of the supreme court upheld the action of a guest in refusing to pay his hotel bill because of too many flies in the dining room. This decision will have a wholesome effect on all hotel proprietors, and a bad

effect on all the flies and other pestiferous insects. Maine is one of the few states, if not the only one, to hale the fly into court and obtain judgment against him.

"The State Department of Health of Maine carries on each year a careful sanitary inspection of summer hotels and camps throughout the state, awarding certificates of approval to those places which comply with the rules and regulations of the Department. All public water supplies in the state are examined several times each year by the Department. The state is divided into eight health districts, each in charge of a full-time, trained, district health officer who is constantly on the watch for insanitary conditions and sources of disease. In addition there are more than 500 local health officers serving their respective communities."



Michigan.—A census of the state's water supplies, requested by the U. S. Public Health Service, has just been completed by the Michigan Department of Health.

It reveals two things: First, that 75% of Michigan's population, or 2,934,592 people, are served with municipal water supplies; and second, that 16.4% of the population, or 588,500, plus a large percentage of the 916,805 using private wells, are drinking water that is not properly protected from contamination.

"With the industrial growth and increasing population of the state," reads the report, "contamination of Michigan's unusually abundant water supplies has also increased. That percentage of the citizens drinking unprotected municipal and private water supplies is in continual danger of water-borne epidemics, and a constant menace to communities supplied with pure water."

Municipal surface water supplies, drawn from rivers and lakes, serve 58.2% of the population, while water pumped from deep and shallow wells, designated as ground water, is furnished to 17.5% of the citizens.

Exactly 50% of the population, 1,833,611 people, now have drinking water that is chemically treated to render it safe, the census shows, while 341,881, or 9.3% are supplied with filtered water. Upon the completion of contemplated filter plants, and filter plants now building, an additional

1,322,880 people—33% of the population, will be drinking filtered water.

To correlate all health and allied work carried on by women's organizations in Michigan, directors and heads of 10 specialized state activities have consolidated there forming a committee to be known as the "Coöperative Public Health Council," whose function is to serve as a clearing house for interrelated problems.

"Contact with practically every woman throughout the state will be established by the Council," declares the Chairman, May Person, professor of nutrition at the Michigan Agricultural College. "This will mean," she writes, "the equivalent of reciprocal advantages from the various agencies and a multiplication of their power. Matters concerning one group of workers will be referred and systematically handled."

General physical examinations of school children, between now and the end of the school year, are urged by the public health authorities in order that dangerous remedial defects, and correctable physical conditions may be remedied during the summer vacation. Such a procedure, it is pointed out, will improve the health of communities and help raise next year's class ratings.

"Scarlet fever, diphtheria, and other diseases have been unusually prevalent in nearly every part of the state; many children have lost time from school on account of sickness which may have left marks affecting the health of those that apparently recovered; and the lowered physical resistance of thousands of children has rendered them peculiarly susceptible to tuberculosis," according to Dr. R. M. Olin, Commissioner of Health, who further notes that, "These circumstances, together with the fact that a large percentage of children are working under avoidable handicaps of bad throats, vision, hearing and teeth would indicate that parents should have their children carefully examined."



Minnesota.—Special research in the effect of tuberculosis on vital lung capacity is to be conducted at the University of Minnesota by Dr. J. A. Myers, instructor in medicine at that university, as the result of his appointment to the fellowship of the Hennepin County (Minnesota) Tuberculosis Association. This fellowship was established by the Association in the Graduate

School of the University of Minnesota for original research in the cure and prevention of tuberculosis.

The practical application of Dr. Myers' study will be with reference to the earlier detection of tuberculosis and the determination of how much and what kind of work a patient, in whom the disease has been arrested, can do without risking a relapse. He has already published results of earlier researches into the effect of tuberculosis on vital lung capacity, as well as studies on the mammary gland, the voice organ, and the nervous system.



Mississippi.—The State Bureau of Rural Sanitation is operating in eight counties at present. Union and Calhoun counties each recently made an appropriation of \$5,000 for a health unit. The State Board of Health, in coöperation with the International Health Board, will contribute to each of these counties an equal amount, making a budget of \$10,000 per county. Each health unit is in charge of a trained and competent health official who is a physician. The program of county health work is upon a broad basis, devoting special attention to the control of soil pollution diseases and child welfare, including medical inspection of school children.

The State Board of Health is considering the question of manufacturing anti-rabic material for the people of the state. It is believed that it can be manufactured by the Board cheaper than it can be purchased. Heretofore this treatment has been obtained free from the U. S. Public Health Service, and since the supply has been discontinued it is deemed necessary to make the new arrangement.

The work of the Bureau of Child Welfare in Mississippi is becoming well organized under the direction of Dr. F. J. Underwood. Child Welfare Units have been organized in as many as five counties. The work consists in pre-natal work, care of expectant mothers, medical examination of all the school children in the county worked, holding nutrition clinics, and considerable attention will be given to children of pre-school age. It is felt that much benefit will come to the people of the state through the activities of this Bureau.

New Jersey.—Some of the legends of the New Jersey Council of Child Welfare, issued in connection with Child Welfare Week (May 8-15, 1921), are worth while noting for use of other communities engaged in similar work. "Come, let us build a happy state!" is the first suggestion followed by the question, "Is your community ready to do its share?" while others impress important principles, as may be seen by running them over:

"Let us give every New Jersey baby a chance to be born well."

"As he grows older, let us make New Jersey mean to him opportunity and generous help."

"Let us make New Jersey mean home."

"If we do this, we shall not need to worry about Bolshevism, or any other 'ism' that destroys."

"Let us give every child in the state a chance for a strong, healthy body, and happy play days to remember."

"Let us build the happy, contented New Jersey of tomorrow by the right care for the children of today."



New Mexico.—Five full-time county health units are now in operation in the state, under the direction of trained health officers. They are as follows:

Union county, Dr. C. H. Douthirt, Clayton; San Miguel county, Dr. M. D. Moran, Las Vegas; Santa Fe county, Dr. D. B. Wilson, Santa Fe; Bernalillo county, Dr. J. F. Docherty, Albuquerque; and Chaves county, Dr. D. W. Gudakunst, Roswell.

Under the law recently passed, it is planned to appoint a sub-registrar of vital statistics in each school district in the state. These men will receive payment at the rate of 25 cents each for every birth and death certificate filed by them. It is hoped that this will improve materially the collection of vital statistics.

On April 28th there was held in Albuquerque a conference of all local health officers in the state. Demonstrations were given at the State Public Health Laboratory and the operation of the full-time county health department was shown. This is the first conference of its kind to be held in New Mexico and it was planned to form, at that time, the New Mexico Health Officials' Association. The conference was held on the day preceding

the meeting of the State Medical Society in the same city.

The free venereal clinic in Santa Fe has been growing rapidly, due to the activities of the full-time health officer and of Miss Adelaide Arms, Field Agent of the Interdepartmental Social Hygiene Board. During February and March all of the prostitutes in the city were rounded up and were found to be infected with one or more venereal diseases in every case. They were placed in isolation by an order of the District Court and were given treatment at the clinic. A free venereal clinic is being established in Albuquerque under the direction of the full-time health officer.

Following the reorganization of the Department of Health as the Bureau of Public Health of the State Department of Public Welfare, the salary of the Director of the Bureau, formerly the Commissioner of Health, has been increased from \$3,000 to \$4,000.



North Carolina.—Nearly 300 people in North Carolina met their death last year by fire, the total being barely below the record for the previous year. In 1920 there were 18 lives lost in conflagrations, while 279 died from other burns. The total was 297. For 1919 there were 24 lives lost in conflagrations, and 276 from other burns. The total was 301, just four more than for the last year.

The majority of the deaths from burns were children, resulting from the accidental catching fire of their clothing either from open fires or playing with matches. In the list of those dying from conflagrations are also children who had been left in houses that caught on fire and who could not escape.

The death rate for nearly every disease is being steadily reduced, according to the statistics of the Board of Health, but the accident hazard, as the figures for deaths by burning show, remain practically unchanged.

A new low rate for deaths from tuberculosis in North Carolina was established in 1920 according to statistics just compiled by the State Board of Health. The total number of deaths from this cause for the past year was 2,865, as against a total of 3,005 for the previous year. The reduction in deaths from tuberculosis was one of the important items in enabling the state to

achieve a remarkably low death rate as a whole, the rate for all diseases having been 12.9 per thousand.

In the nation tuberculosis is chargeable with slightly more than 10% of all the deaths that occur. In this state it causes approximately 8% of all deaths. In other words, one out of every 12 deaths in the state is from this cause.

Fatalities from tuberculosis have been much greater among the colored people of the state than among the white. During the past two years a special educational effort against this disease has been made among the colored people by the extension department of the state sanatorium and the State Tuberculosis Association. The recent General Assembly made an appropriation of \$100,000 for a sanatorium for Negroes, and health authorities feel confident that equally good results can be obtained in the reduction of deaths from this cause among the Negroes as have been attained for the population as a whole.



Ohio.—Forty-four Ohio counties, exactly one-half of the counties in the state, have full-time health commissioners today as a result of the Hughes-Griswold act, which went into effect January 1, 1920. The accompanying map shows these forty-four counties in black.

The situation this year represents a substantial increase in health service over that of last year, the first year of operation under the new law.

A great increase in public health nursing service has also resulted from the Hughes-Griswold law. The law makes it optional whether a health commissioner shall be employed for whole or part-time service. Cities, which under the Ohio law are municipalities with more than 5,000 population, constitute separate health districts from the counties in which they are located. In practice, however, full-time health service for the county has in several cases been obtained by an arrangement whereby the city and the surrounding county employ the same man as health commissioner, with his time so divided that the two positions virtually constitute one whole-time position.

For the courtesy of the use of the map showing the distribution of counties having full-time health officers, the JOURNAL is in-

tuberculosis and the betterment of health in general among the citizens. Its slogan is, "Help your neighbor—protect yourself." Its agencies are set down as tuberculosis sanatoria, public health nursing, health education, baby welfare work, health crusade in the schools, Negro health activities and health surveys.

The Association is efficiently organized for the practical accomplishment of necessary work and can effect this with economy. With a field that is state-wide it does much of its work in collaboration with local and county organizations.



Texas.—Dr. J. D. Blevins of Beaumont has been appointed Director of the Bureau of Communicable Diseases of the State Health Department and Dr. S. M. Ramsay has been named for Food Inspector for the Northwestern District of the state.

Last year anti-malaria work was carried on in about a dozen towns of the state and already this season there are indications that the number will be more than doubled this year.

The State Health Department has undertaken a piece of educational work in the preparation of an extensive exhibit which was shown in Dallas during the Texas Congress of Mothers and Parent-Teachers Associations, in April and at the meeting of the State Medical Association in May.

A questionnaire has been sent to all physicians in the state requesting statistics on the prevalence of cancer during the year just passed, and a similar enquiry has been addressed to all county and city health officers with reference to the prevalence of leprosy, pellagra, and encephalitis lethargica during the year 1920.



Utah.—In its current issue of its monthly Health Letters the Department of Public Instruction is conducting a catechism on cancer. This takes up the important facts with reference to the disease, that it can be cured if taken in time, that advertised cures are to be avoided, since the fact is that there is no known medicine that will cure the disease, that irritations predispose to cancer, etc., together with an outlining of conditions that should lead the individual to consult a physician.

The same Department, which is active in

the all-important matter of public health education, sends to its schools each month carefully prepared outlines for hygienic studies. The last talk, that for the ninth month, is a review of the general subject of care for one's own health.



Virginia.—There is quite a bit of rivalry between Richmond and Charlottesville for the honor of being the site for the proposed medical school which is to be made of the two units now conducted separately at the two places. The result of this is that the health conditions in the two places are being very closely evaluated. Everyone knows of the excellent quality of health administration in Richmond, while at the same time, the public spirit of Albemarle County, in which Charlottesville is located, is admirable. It will be interesting to see the outcome of the matter.

Virginia's text book, "Home Nursing," a bulletin recently issued by the State Board of Health and reproduced in book form, has proved invaluable to the Ontario division of the Canadian Red Cross. This week, when re-ordering copies for all his nurses, the director of the division highly complimented the health board of the American state.

The text book which is being used in the high schools of Virginia and primarily intended as a class book is nevertheless equally serviceable for professional nurses, keeping them mindful of details that are sometimes overlooked; and it is a little book that might well be in every home. Its appearance is attractive; its language is simple.



Saskatchewan.—The Soldiers' Settlement Board has recently conducted short course for soldiers' wives in rural centres, at which the Bureau of Public Health has had charge of all the medical and nursing work undertaken. Baby clinics were held at which soldiers' babies were examined. The women themselves were examined and in cases of illness, arrangements were made for free treatment. In connection with the educative course, lectures and demonstrations were given on home nursing, first aid, and moving pictures and lectures given on venereal disease and general subjects.

At the present time plans are under way

for the enlarging of exhibits to be shown at fairs during the summer months, in showy material consisting of numerous posters and useful models, which have been made specially to suit the requirements of the rural districts, of which the province is largely composed.

In connection with the fairs baby clinics are also conducted, at which large numbers

of children are medically examined and scored.

A new Children's Pavilion has recently been added to the Provincial Sanatorium for the care of tuberculosis cases. This pavilion has been built by funds collected by the Provincial Order of the Daughters of the Empire and furnished by the local chapters, and is already taking care of a large number of small patients.



INDUSTRIAL HYGIENE AND OCCUPATIONAL DISEASE

Abstracted by DRs. E. R. HAYHURST and E. B. STARR.

Chronic Carbon Monoxide Poisoning—Its Immediate and Subsequent Manifestations.—This paper presents the clinical observations made by a physician upon herself and three patients who were exposed to small quantities of carbon monoxide gas over a period of two months, during which the presence of carbon monoxide was not suspected as a cause of the symptoms and covering a second period of two months, during which the cause of the trouble was recognized but had not been brought under control. In the course of a third period, extending from January to December, 1920, certain symptoms representing hypersensitization to minute quantities of carbon monoxide were noted. The unique feature of the paper is the careful clinical data describing the symptoms and signs presented by the three patients and the subjective symptoms experienced by the author.

During the first period the symptoms described are—tingling, contracting sensations in the fingers and toes; spontaneous twitching of one finger or toe; numbness of face and scalp, with sensation of a tight-fitting cap on the head; chest walls seem heavy and difficult to move, with breathing an effort; sensation of weight and impeded heart action; sudden transient pallor; dark red lower lip; red patches over bones in which minute veins are sharply marked; color of lower lip and patch on cheeks is in sharp contrast to pallor of face; eyeball has a peculiar "shiny" or "glittering" appearance; veins of hands are strikingly narrow and dark, almost black; acute central

abdominal cramps with visible muscular spasms; pain in bladder, difficulty in starting urination; transient "fainting spells"; shivering attacks without temperature; nervous irritability and depression; "raw" throat.

During the second period great fatigability; shortness of breath on exertion, with rapid pulse; extreme chilliness, hands cold and lifeless; impossible to get warm even in front of a roaring fire; sudden uncontrollable drowsiness; extreme thirst; transient bronzing of skin; a peculiar transient "shrinking" of face which looks pinched and old, this sign continuing at times for many hours; "uncomfortable" headache; irregular "flattening" pulse.

During the third period marked hypersensitization to minute amounts of carbon monoxide as when coming into proximity to exhaust gas from automobile or smoke from chimneys—the symptoms being sudden, acute, transient nausea; numbness of feet extending to knees; numbness of face and scalp, the latter feeling too tight; headache was characteristic and circumscribed to a small area of scalp which became sore to touch and not relieved by usual remedies; headache does not incapacitate for work, though is highly unpleasant and wears off in a day or so.

The author calls attention to certain precautions which every physician should be prepared to take in cases that are poisoned by carbon monoxide. The author also calls attention to the manner in which the gas clings to inanimate objects and also to the possible relation existing between endocrine efficiency and

chronic carbon monoxide poisoning. Any one interested in this subject would do well to read the original article.—Georgine Luden, *Modern Medicine*, Vol. 3, Nos. 2 and 3, pp. 102 and 167, 1921.—(E. B. S.)



Industrial Lead Poisoning.—This paper was awarded the Hamilton Fisk Biggar, Sr., prize for 1920, granted by the Cleveland Medical Library Association. It is presented for the purpose of clearing up a few points of disagreement in relation to lead poisoning and is based upon a study of 900 workers exposed to lead hazards in American industries. Eighty cases of lead poisoning were diagnosed and 95 other cases were tentatively diagnosed as lead poisoning. The author points out that there are now approximately 200 American industries in which lead in some form is used. The author states that poisoning may occur from fumes or molten lead even when the temperature does not reach the boiling point. He has demonstrated by means of sodium sulphide papers that lead fumes are given off from pots of molten lead at a temperature of 750° F., and has found cases of lead poisoning among men working with lead at this temperature. In acute cases the red blood cells become more resistant to hemolysis than normally and Liebermann's blood corpuscle resistance test is of diagnostic value. Acute plumbism is usually diagnosed by symptoms rather than signs. In the chronic form of poisoning marked pallor is almost a constant symptom. Contrary to the usual opinion the author is inclined to believe that this pallor is due to spasm of the arterioles rather than to an actual anemia and a number of cases of chronic poisoning are cited to prove his contention. In the author's studies he has also found basophilic degeneration of the red cells to occur far less frequently than other investigators have observed and he concludes that this finding has been greatly overrated as a diagnostic sign. The author observed one change in the blood picture which is practically constant in chronic cases, namely, a marked increase in the large mononuclear cells, ranging from 10 to 35%. Hayhurst is the only other investigator the author refers to as having noted a similar finding. Interstitial neuritis, which affects usually the nerves supplying the muscle groups which are most used, is described by the author as probably the most important pathologic change in chronic lead poisoning, while headache is the most common symptom presented

by the nervous system. The author refers to the lead line as merely indicating potential lead poisoning although it was demonstrable in 90% of his positive cases. Hypertension of the blood vessels is not so common as generally supposed and was only found in one group of workers in a lead refinery. The paper presents illustrations of typical lead palsies. Constipation as a symptom of chronic lead poisoning is not so common in the author's opinion as is usually thought. Under the head of diagnosis he points out the fallacy of refusing to make a diagnosis in the absence of lead line, colic or wrist drop. Sulphur baths and the Oliver-Clague electrolytic treatments are referred to as of problematic value. No comment is made as to the value of a daily dose of 1 grain of calcium sulphide as used in some factories.

The measure of first importance in curative treatment consists in removal of patient from sources of poisoning. Potassium iodine should not be used in acute cases and when given in chronic cases, should be in small initial doses on account of the danger of too sudden liberation of lead which is likely to lead to re-absorption accompanied by an exacerbation. Magnesium sulphate is probably the best aid in the treatment of constipation by formation of a relatively insoluble sulphide of lead in the intestines. Benzyl benzoate has the promise of becoming the sovereign remedy in the treatment of constipation and colic. For the paralysis, massage and the galvanic current are of value. As an aid to the prophylactic and the curative treatment of industrial plumbism, the author points out the necessity of providing for the compensation of occupational disease. By this means there would be a great reduction in the number of permanent disabilities and early treatment would be encouraged, which is just as important in lead intoxication as in the successful treatment of tuberculosis. Real progress cannot be hoped for unless physicians recognize it as their duty to report all cases of occupational disease to state departments of health, thereby revealing the true prevalence of these diseases. The effects of lead poisoning should be looked for in morbidity records rather than in mortality records. The action of lead is to cut short the normal span of life.

Lastly, the author sets forth certain "Principles of Prognosis" which he formulates as follows:

1. Cases of lead poisoning in which patients continue to be exposed to lead, under con-

stant conditions, intoxication steadily progresses.

2. Patients who continue to be exposed to the hazard, but who observe proper hygienic precautions, usually tend to improve and many such recover.

3. Patients with lead poisoning who continue to be potentially exposed in factories where working conditions are improved, usually tend to improve and many recover.

4. Patients with lead poisoning who remove themselves from the source of danger usually recover, with the exception of the severe and long continued cases.—Martin D. Shie, *Jour. A. M. A.*, March 26, 1921, pp. 835-842.—(E. B. S.)



The Application of Certain Physical Efficiency Tests.—It is the purpose of this article to state applications of Schneider's physical efficiency test in the Medical Division of the Air Service. By this scoring method it is attempted to determine the degree of "staleness" or physical inefficiency. "A physician skilled in neuropsychiatry and cardiovascular work can make a diagnosis of staleness, but he cannot determine the degree of fatigue." "Schneider, by use of arbitrary numbers, has made the best effort in this direction." The author has also tried Crampton's method of scoring physical efficiency. In Schneider's test which was used on 410 cases the mean score was found to be 11, the maximum possible score being 18. By the Schneider method those making a score of 8 or more will be qualified and those with a score of 7 or less disqualified. The Schneider method of scoring is based on the combined evaluation of the following six factors, each factor having a maximum value of three—(1) Reclining pulse rate. (2) Standing pulse rate. (3) Pulse rate following exercise. (4) The promptness with which pulse returns to normal after exercise. (5) Systolic blood pressure in standing position. The arbitrary method of scoring may be found in a table appearing in an article by Schneider, *Jour. A. M. A.*, May 29, 1920. The degree of physical disability produced by loss of sleep, acute infections, dissipation and various excesses is numerically shown by the scoring test. The article also sets forth the value of daily systematic exercise as determined by physical efficiency tests. In summary it is stated that "Schneider's test does not supplant, but should be used in conjunction with a

thorough physical examination. For use with aviators and athletes this is the best test so far offered for measuring physical efficiency and fatigue. The physical directors of schools and colleges will find this test a valuable aid in determining the amount of exercise necessary for physical fitness in each individual case." The writer believes that a man who can only make a score of nine should be given a thorough physical examination to determine whether his condition is due to disease or to insufficient exercise. The writer has encountered two conditions in which any test based on cardiovascular efficiency will not reveal the true condition of a man; these are (a) bradycardia, which gives a better rating than the condition warrants and (b) those who are disturbed psychically, who would receive a lower rating than they deserve. Before qualifying or disqualifying an aviator it is best to make scoring tests on three successive days.—Verner T. Scott, M. C., Air Service, Mitchel Field, L. I., N. Y. *Jour. A. M. A.*, Vol. 76, No. 11, March 12, 1921, p. 705.—(E. B. S.)



A Study of Pulmonary Silicosis.—The clinical aspects of the problem of silicosis are dealt with in this article based on a study of 57 cases. The condition depends upon the inhalation of dust containing a considerable amount of free silica in finely divided particles most of them being less than 2 microns in diameter, particles so fine that it is difficult to find a respirator capable of arresting them without embarrassing the breathing of the wearer. The gross and microscopic character of uncomplicated silicotic lung is minutely described, as well as that of the silicotic lung infected with tuberculosis. The patient's statement as to the time of onset of symptoms is often misleading in view of the fact that patients generally assign the beginning of illness to the time of some intercurrent condition which in fact marks an exacerbation of the insidious condition. The period of exposure to silica dust necessary to produce symptoms varies greatly. One of the author's cases had been exposed but six weeks to the dust. Another patient showed very definite symptoms and signs two years after the commencement of a period of nine months' work involving exposure. The onset of symptoms may immediately follow exposure or appear a variable time after exposure has ceased. The average time elapsing between commencement of ex-

posure and onset of symptoms was about 19 years.

Dyspnea was the early symptom observed in many of the cases. The insidious onset of this symptom is such that patients overlook its presence until some intercurrent catarrh exaggerates the symptom. It is present in some degree in every established case and in the absence of complications is a guide to the degree of fibrosis present. Next in frequency to dyspnea is cough, which becomes quite troublesome during attacks of influenza or colds. Other symptoms which may be present are occasional hemoptysis which proved fatal in two cases, pleuritic pains, night sweats, weakness and wasting. It is possible by a physical examination to obtain the first indications of the presence of the condition even before the patient is cognizant of anything abnormal. Routine physical examinations of workmen in dusty trades is, therefore, valuable in the early discovery of these cases.

Where tuberculosis complicates the condition, bronchial or amphoric breath sounds can be heard. The commonest site for early signs is to be found in the writer's experience in the right mammary region. Radiography proves a valuable aid to diagnosis of silicosis. The author presents typical cases representing early stage, middle stage and advanced stage cases.

From the standpoint of prognosis, "So long as the condition remains one of uncomplicated

silicosis, progress is virtually dependent on the increase of dyspnea." Intercurrent catarrhs increase the dyspnea and may become chronic. From the onset of symptoms till time of death, the period of illness varies greatly. Among stone masons, the average was $6\frac{1}{4}$ years, among lead miners $3\frac{3}{4}$ years, among silica workers $3\frac{3}{4}$ years, in quarrymen $2\frac{1}{2}$ years. The most important variation in course of disease was produced by the intercurrent of tuberculosis which, when advanced, can not be differentiated from ordinary chronic tuberculosis. The length of illness in the presence of tuberculosis is shortened. The removal of the patient from the source of irritation does not arrest the progress of the disease, as the fibrotic process continues. Silicosis predisposes to tuberculosis as a result of changes produced in the lungs, though the condition may produce death without the presence of tuberculosis, in which case death often results from pneumonia, influenza, or failure of the heart, following on the respiratory embarrassment.

Prophylaxis is the only means of combating the disease which may be effected by preventing generation of dust at its source and in the early exclusion of workers showing signs of shortness of breath. Special measures should be taken in industries involving exposure to dust of high silica content—E. L. Middleton, *Jour of Indus. Hyg.*, Vol. II, No. 11, March, 1921, p. 433.—(E. B. S.)

Take Notice! The Fiftieth Annual Meeting of the A. P. H. A. will be held in New York City, November 14-18, 1921. Headquarters at Hotel Astor.

PUBLIC HEALTH LABORATORY NOTES

Abstracted by ARTHUR LEDERER, M. D.

Experimental Studies of the Nasopharyngeal Secretions From Influenza Patients.—

An active transmissible agent present in the nasopharynx in early cases of influenza has been found to produce definite and characteristic clinical reactions and pathological effects in rabbits as already described in an earlier publication. The experiments here reported indicate that this active agent has the following properties. The agent as it exists in the nasopharyngeal secretions in man, and in the lungs of rabbits injected with the human secretions, passes through Berkefeld V and N candles. The filtered material produces the same effects on the circulating blood and on the lungs of rabbits as the unfiltered material. The peculiar effects described as arising in the inoculated rabbit may also be induced in guinea pigs inoculated with the agent. The agent responsible for the reaction on the blood and the lungs of rabbits withstands the action of glycerol in a sterile 50% solution, for periods up to nine months. The question must be left open at present whether the agent can withstand longer contact with the chemical. In two experiments after 10½ months' contact the agent induced no observable changes in the blood and lungs of rabbits. The influenzal agent exerts an effect on the pulmonary tissue which encourages the invasion of the lung and subsequent multiplication there of ordinary bacteria, such as the pneumococcus, streptococcus, and *Bacillus pfeifferi*. A similarity is believed to exist between the conditions under which concurrent infections arose in the inoculated rabbits and those which seem to favor the occurrence of concurrent infections during epidemic influenza in man. In no instance did death occur in the rabbits as a result of the uncomplicated effects of the influenzal agent alone. When death occurred in any of the inoculated animals concurrent infection of the lungs by ordinary bacteria was present. The microorganisms most commonly met with under these conditions were Pneumococcus Type IV and atypical Type II, streptococci, and hemo-

globinophilic bacilli. Other kinds encountered less often.—Peter K. Olitsky and Frederick L. Gates, *Jour. Exp. Med.*, 33, 361 (1921).



Relation of Certain Carrier Conditions to the Virulence of Hemolytic Streptococci.—

A low degree of virulence of hemolytic streptococci for mice is found to occur in cultures taken from healthy carriers, as compared with those from cases of actual infection. No differences in virulence have been observed between strains from early and from late carrier states. The duration of a strain in a healthy throat seems to have little to do with its virulence. A rather rapid decrease in virulence seems to occur after the acute infection has ended. Chronic carriers of hemolytic streptococci as a result of an attack of tonsillitis show a very small percentage of virulent strains. A large percentage of cases of acute tonsillitis become chronic carriers of hemolytic streptococci, as evidenced by cultures of tonsils removed three to six months following the acute attack.—Leon C. Havens, and Margaret L. Taylor, *Am. Jour. Hyg.*, 1, 192. (1921.)



Bacterial Content of Telephones With Special Reference to Respiratory Pathogens.

—Various pathogenic bacteria are present and can be isolated from the transmitters and receivers of telephones. Hemolytic streptococci were isolated in 15.9%, the diphtheria bacillus in 2%, and the pneumococcus in 1%, from the transmitters and receivers of 94 telephones. 90.0% of 11 strains of hemolytic streptococci isolated were virulent for rabbits. Sterilization of telephones should be practiced to prevent the spread of virulent organisms. Cleansing with soap and warm water and subsequent sterilization in bichloride of mercury, lysol, etc., for a period of 10 minutes, is recommended. In speaking, the mouth should not come in direct contact with the transmitter. The public should be taught how to use the telephone hygienically.—Clarence C. Saelhof, *Am. Jour. Hyg.*, 1, 234. (1921.)

Blood Cultures in Bubonic Plague.—The authors examined the blood of 20 patients admitted to the Claude Bernard Hospital with buboes supposed to be due to plague, and obtained the following results: (1) In 8 cases in which the other laboratory tests were simultaneously negative the blood cultures were also sterile. (2) Of 12 cases in which the diagnosis of plague was established bacteriologically, namely, by presence of Yersin's bacillus in the pus or serum of the glands, inoculation into mice and cultures from the glands, the blood cultures remained sterile in 3, and in 9 were positive. The authors, from a study of their cases, came to the following conclusions: (1) The presence of Yersin's bacillus in the blood is the rule during the first days of the disease. (2) The mildest forms may be associated with bacteremia. (3) The bacteremia present in the mild forms of bubonic plague must be distinguished from the primary or secondary plague septicemia which is the rule in grave forms with multiple visceral lesions. Cultivation of the blood is a valuable addition to the bacteriological diagnosis of plague.—Teissier, Tanon, Gastinel and Reilly, *Bull. et Mém. Soc. Méd. des Hôp. de Paris*, February 17, 1921; *Brit. Med. Jour.*, No. 3143. (1921.)



New Method Facilitating Detection of Tubercle Bacilli.—The authors describe a new method of treating sputum, pus, feces, etc., in which it is desired to determine the presence of tubercle bacilli. To the suspected fluid (10 volumes) is added filtered sterilized ox bile (8 volumes), to which two drops of tincture of iodine per cubic centimeter have been added. The mixture is shaken, and becomes completely liquefied after 18 hours at 37° C., three hours at 56° C., fifteen minutes at 100° C. After cooling, one-third the volume of saturated salt solution is added, then 2 or 3 c. cm. of ether. After shaking the mixture is centrifuged (about 6,000 revolutions). By means of a platinum loop fragments are withdrawn from the pellicle which forms at the junction of the watery and ethereal layers. Using this method the authors have found among 73 sputa 23 instances in which a positive result was found in cases which by the ordinary methods appeared negative; tubercle bacilli were found also in 4 cases of cold abscess and 3 of pleuritic effusion.—Grysez and Bernard, *C. R. Soc. Biologie*, December 4, 1920; *Brit. Med. Jour.*, No. 3142. (1921.)

Rate of Sedimentation of the Blood Cells in Tuberculosis.—The author reports favorably on the simple test, the principle of which depends on the fact that the rate at which the blood cells sink in a vertical column of blood is hastened by various diseases, including tuberculosis. He describes in detail the technique of this test, and discusses the results of about 3,000 tests made on 500 persons, 369 of whom were tuberculous. The rate of sedimentation varied greatly in health and disease; it ranged from 1 to 120 mm. per hour; but a rate that exceeded 10 mm. per hour was invariably associated with some pathological condition. The author found this test of little diagnostic value because in pregnancy and in a host of diseases other than tuberculosis the rate of sedimentation is affected. On the other hand, he found it of great value in gauging the degree of activity of the tuberculosis, for the rate of sedimentation varied directly with the activity of the disease, as determined by injections of tuberculin. The test was more delicate than the measurement of the temperature as an index to the degree of activity of the disease; in some cases the rate of sedimentation began to rise some time before a rise of temperature was demonstrable by the thermometer. The author suggests that this test may indicate a condition which he describes as "fever without rise of temperature." The test was not only of great prognostic importance, but also a valuable guide to the effect on the course of the disease.—Westergren, *Acta Medica Scandinavica*, January 26, 1921; *Brit. Med. Jour.*, No. 3142. (1921.)



Number of Red Blood Corpuscles at Different Ages and Under Different Conditions.—The author fixes the averages at 5.5 millions in men and 5 millions in women. The upper limit is 6.1 millions in men below 30, slightly lower in women. Above 60 the numbers are nearly normal in both sexes, some cases showing figures even higher than normal. This may be due to deficient cardiac power, but alcoholism also accounts for it. Of greater importance is the fact that the number of erythrocytes varies in different parts of the blood vessels and can vary greatly in the different capillaries. The physiologic condition of the extremities thus must be taken into account in clinical counts.—H. I. Bing, *Acta Medica Scandinavica*, Stockholm, 53, 833 (1921.)

Experiments on the Carriage of Intestinal Protozoa of Man by Flies.—Free forms of *Entaëba histolytica* and *Chilomastix mesnili* ingested by flies were killed in an hour or less, not encysting. Motile *Chilomastix* were observed in a fly's feces 7 minutes after it had fed on a stool containing them. Cysts of the intestinal protozoa ingested by flies were gradually killed in times varying with the species. When flies which had ingested cysts were drowned in water, the cysts survived much longer. In experiments designed to test the maximum capacity of flies at a single meal, it was found that a single housefly (*Musca domestica*) could ingest 0.0068 c.c. of fluid and a single blow fly (*Calliphora erythrocephala*) could ingest 0.022 cc. An infection with *Herpetomonas muscæ-domestica* was found in only one out of 223 specimens of *Musca domestica* examined at Baltimore. Two infections with *Herpetomonas calliphoræ* were found in 124 specimens of *Calliphora erythrocephala* examined.—F. M. Root, *Am. Jour. Hyg.*, 1, 131. (1921.)



Comparative Study of Hemolytic Streptococci from Milk and from Human Lesions.

—The number of cultures used in this work was not great, especially the group of human pathogenic cultures, yet they were carefully selected and are believed to be fairly representative. Several conclusions may, therefore, be warranted from the study of the data presented. Hemolytic streptococci which differ in many respects from human pathogenic streptococci occur quite generally in raw and pasteurized milk. A large number of these strains behaved alike in a series of tests, and they, therefore, seem to form a homogeneous group or species. There are certain general differences in morphology between milk and human hemolytic streptococci. These are not absolute and by themselves are of little value for purposes of differentiation. The reaction of milk hemolytic streptococci in litmus milk is characteristic and is of importance in differentiating them from pathogenic strains. The pathogenic hemolytic streptococci have a greater range of fermenting power than do the milk strains. The most constant difference between the two groups is the failure of the latter to ferment saccharose. The identification of hemolytic streptococci should always be confirmed by testing for hemolysis in broth culture. The true Beta type produces hemolysin in broth, while others which resemble the Beta

type quite closely do not. There is no constant difference in the hemolytic titer of milk and pathogenic strains, but the time required for hemolysis to take place is distinctly greater with the milk strains. This characteristic could be used to aid in differentiation. The milk hemolytic streptococci are not pathogenic for mice, and virulence cannot be demonstrated even by successive passages. The difference in the thermal death rates of milk and pathogenic hemolytic streptococci serves to differentiate them. The former die at a slow rate in milk at 60° C., while the latter die rapidly. With a very large number present it is possible for pathogenic streptococci to survive pasteurization at 60° C. for 30 minutes. The number of survivors is undoubtedly very small, but they are able to produce a culture virulent for mice. Higher pasteurizing temperatures would give a better margin of safety. Successive heating of pathogenic streptococci does not result in the production of a heat resistant strain. Hemolytic streptococci resembling the pathogenic type in every respect were isolated from certified milk. They are of low heat resistance and could readily be destroyed by proper pasteurization.—Raymond C. Salter, *Am. Jour. Hyg.*, 1, 154. (1921.)



Cholesterol in Cerebrospinal Fluid.—Normal cerebrospinal fluid contains no cholesterol or only a very small trace of it. Fluids in which the Wassermann and Lange reactions are positive contains no cholesterol in appreciable amounts. Only three out of 25 such fluids gave a reading in the colorimeter. Fluid of hemorrhage of the brain showed high cholesterol content. Fluid from tumor of the brain gave a trace of cholesterol. Fluid from a case of brain abscess gave a high cholesterol reading. The majority of meningitis fluids showed a trace of cholesterol. Three fluids had a high reading. Ventricular fluid gave no cholesterol reading, except when there was the presence of hemorrhage of the brain or other pathologic condition. The Hauptmann reaction seems to depend on the cholesterol content of the cerebrospinal fluid. This work does not bear out Pighini's contention that the Wassermann reaction depends on the cholesterol of the fluid. The authors believe that the cholesterol content depends wholly or partially on the permeability of the meninges.—A. Levinson, L. L. Landenberger and K. M. Howell, *Am. Jour. Med. Sciences*, 161, 561. (1921.)

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VITAMINS AND CERTAIN ASPECTS OF THEIR RELATION TO PUBLIC HEALTH

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This authority warns against the commercial exploitation of vitamins. If people would recognize the real situation and eat more fresh vegetables, fruits, eggs and milk, they need not under ordinary circumstances purchase expensive and possibly inefficient proprietary articles, nor worry about vitamins. Natural sources for these products abound on every hand.

N EARLY ten years have passed since Professor Gowland Hopkins demonstrated the fundamental role played in animal nutrition by minute quantities of hitherto unrecognized food constituents which are now generally termed the vitamins. So important and interesting a discovery has not failed to attract an ever increasing amount of attention, since it was soon appreciated that the new knowledge would render necessary a modification of the theories of dietetics and today there are few who would deny the fundamental facts which the researches of Hopkins have established; on the other hand there appears to be a real danger that a misguided interest in the vitamins may cause a swing of the pendulum in the opposite direction.

Recent years have provided many examples of this exaggerated counterswing, which appears to be in many cases proportional to the importance of the original discovery, and in such cases the attainment of the equilibrium point at which the whole subject is viewed in its right perspective is much delayed. This is of course largely caused by the activities of the quack, and to a less extent by the well-meaning but frequently scantily informed pseudo-scientist, neither of whom has been slow to recognize the money value of radium, vaccines, and now vitamins. Popular articles on vitamins in the lay press are today being encountered on every hand, and the man in the street is beginning to ask what are these substances and what is their function in the body. Naturally the quack is

preparing to supply a certain amount of more or less accurate information together with an assurance that his particular proprietary article will supply all the necessary vitamins. I foresee that the magic word vitamins will be a gold mine for the patent medicine manufacturer unless the public is educated to rational conception of these substances and unfortunately the scientific literature is fast becoming choked with much that represents a very poor standard of work in this important field.

I have also an impression that the layman is gradually being induced to think that the vitamins are so many elixirs of life, and that the food of the gods is no longer a conception of fiction but an established fact. In this lies the danger, and it would be well if it were generally recognized that the vitamins, remarkable as they undoubtedly are, are no more essential to the animal body than are many other food components about which we know a great deal more. Everyone would appreciate the folly of an engineer who devoted his whole attention to the lubricating oil without any regard to the supplies of fuel or the renewal of the damaged parts of his machine. To enable the human body to perform its work satisfactorily the food supply must be adequate and well-balanced from many standpoints. First, the supplies of foods which may be burnt in the body as sources of energy must be adequate; secondly, building material either for construction or repair must be provided not only in sufficient amount but of the right type; thirdly, certain indispensable inorganic salts are necessary; and finally, other factors about which we know very little but which we term the vitamins, must be available in the required amount. It is doubtful if any one of these requirements can be truly considered as being more important than the others.

Research on these unidentified dietary constituents has led to a fairly satisfac-

tory differentiation of three distinct substances, or perhaps three classes of substance, which all appear to act in extraordinarily minute amounts in assisting to maintain the nutritive condition of the animal body at a normal level. As an example may be quoted some recent experiments by Dr. Zilva of the Lister Institute who informs me that an amount of crude cod liver oil as small as 3 milligrams is sufficient to supply the daily requirements of a rat for one of the three vitamins, the factor A. Now I have been able to show that in an oil such as this the activity is not due to any known component, and that from the 3 mgm. must, therefore, be subtracted the weight of the contained fatty acids, glycerol, cholesterol, lecithin and pigments, which would leave only a very small fraction of a milligram to represent the active substance. Probably it is very largely this extraordinary potency of minute amounts which has caused the three recently discovered food factors to be grouped in one class and labelled the vitamins. On the basis of chemical and physical properties there is very little excuse for this classification, and indeed there are many arguments against it. It is now somewhat generally believed that the normal functioning of the thyroid gland is dependent upon a minute but regular supply of the element iodine in the food. If this association were not understood today it is probable that we should have the group extended to include a hypothetical thyroid vitamin.

Classification of these substances and speculation as to their action is not only useless but dangerous until laboratory experiments have solved the problems by accurate methods.

Meanwhile since the public is beginning to take an interest in vitamins, the question does arise as to how the present knowledge should be handed on to them; for it is important that the man in the street should know certain of the broad principles of the science of nutrition, no

matter how rough and ready may be his knowledge. The economic problems presented by the large towns today are many and complex, and it is doubtful if any single problem is of such vital importance as that of the food supply of the masses. Every day this food supply is becoming more and more artificial in character, and this process must necessarily continue as long as the populations of the towns increase and the web of their interdependent lives becomes more and more complex. The future of preventive medicine in Western Europe in the near future must be largely centered on improving the food of the people if any great progress is to be made. The complex of physiological reactions which constitutes resistance to disease is susceptible in an extraordinary manner to the influence of restricted diets, and there can be no simpler method of ensuring a high immunity for the people than by making it possible for them to obtain good natural foods at cheap prices.

It is perhaps in this connection that the relationship of the vitamins to the public health is most apparent. These substances, whatever their nature may be, are undoubtedly of very great importance to the health of the people, and especially of the infants and children. The prevalence of rickets, of bad teeth, of defective growth and of low resistance to infective diseases is a high price to pay for our departure from nature's rules.

Every reader is aware of the beneficial effects of a diet rich in fresh vegetables, fruits and dairy produce, and today there does seem to be an abundance of evidence in favor of the view that these effects are largely ascribable to the valueamins. In fact Professor McCollum of Johns Hopkins University, Baltimore, Md., who has devoted many years of patient work to the study of nutrition and who has contributed largely to the advances which have been made in investigating the vitamins, has suggested that we should term milk and the green

vegetables "Protective foods," and there is much to be said for his suggestion. Certainly everything possible should be done to increase the consumption of these foods and to render them accessible at cheap prices. I venture to think that no investment would yield the nation so rich a return as a vigorous campaign for scientific dairy farming with large supplies of cheap milk of good quality and a widespread extension of the allotment system, now unfortunately on the decline.

Many questions are being asked as to the effect of cooking on vitamins in foods and there is a somewhat general impression abroad that the usual processes of boiling and stewing destroy these dietary factors. Recent work shows, however, that only the vitamin C is liable to this destruction to any serious extent.

If one studies the average diets of the masses it is soon apparent that a large proportion of the population is subsisting on a food intake dangerously low in certain of the vitamins. The high price of dairy produce has caused a great fall in the consumption of butter with a corresponding rise in the sale of margarines which seldom, as at present prepared, contain as high an amount of the vitamin A as butter fat, although the majority of manufacturers are making genuine efforts to make good this deficiency, and there is also a decrease in the consumption of fresh milk in the poorer quarters.

Experiments made recently indicate that under ordinary circumstances the destruction during the usual cooking processes is not serious, except perhaps in the case of the anti-scurvy vitamin, which is apparently more liable than the other two. Nevertheless, it is advisable that the every day diet, especially of young children or of expectant or nursing mothers should contain as much fresh fruit, salads, milk and butter as is possible, for we have definite evidence that in order to provide a milk of high nutritive value for her offspring a mother must herself receive ample supplies of

those indispensable substances which are to be transmitted through her milk to her young. This leads one on to a renewed emphasis of the vital importance of breast feeding, and the percentage of women who fail to rear their children would be greatly reduced if their nutritive state were improved.

After all, the whole problem of the vitamins as they affect the diet of the people is merely one of common sense when the essential facts are considered. Our grandmothers knew naught of vitamins but they did appreciate the value of wholesome fresh food, and would have no other.

The question of ensuring an adequate supply of vitamin-rich foods to young children is perhaps the most urgent matter which the country will have to face very soon. We know that the effect of a deficient supply of these "building stones" in youth, especially in early youth, is very far reaching and may undermine the health in after-life to a serious extent. It is not sufficient to apply measures which will ward off the more severe consequences of the deficiencies, such as rickets and scurvy. The treatment must be deeper than that, and more recognition must be given to the borderland of disease which is today so much neglected.

I refer to the condition where the symptoms of ill health are not sufficiently marked to attract any particular attention. In the United States recently most remarkable results have been obtained with a number of children of this type. They were typical of the undersized, ill-developed, and mentally backward class of child encountered in such sadly large numbers in the large towns. Groups of these children were given extra milk every day at school whilst parallel groups were given an equivalent amount of food units (calories) in the form of bread and margarine. The acceleration in the rate of growth of the children receiving milk, and the rapid development of their pre-

viously stunted powers as compared with the control group was most striking. How these apparently insignificant dietary factors may profoundly alter the nutritive state of the body is also well illustrated by an example recently quoted by Professor Hopkins. In a well-known boys' school it was observed that the lads were not in their usual good health, that they were in generally poor form of lacking keenness both for work and games. The divergence from the normal state was so marked that an attempt was made to ascertain the cause. The sanitary state of the school was found to be excellent and all possible solutions of the problem were investigated without success until the dietaries of the boys were examined. It then appeared that they were receiving practically no fresh fruit or vegetables of any kind, and that formerly they had been able to obtain fruit from an outside source with ease. The deficiency in their diet was made good by the inclusion of fruit and like magic the normal health and vigor of the lads returned.

Examples of like character could be quoted indefinitely, many of them making most interesting reading; as does the story of how the health of the troops in the Eastern Theatres of War was much improved in the later stages of the campaign by cultivating large tracts of land behind the line to provide the men with vegetables, but the examples which have been given are sufficient to emphasize my point.

Perhaps one of the most important discoveries recently made in research on the vitamins is that the value of many foodstuffs as sources of these substances may be very variable, though as far as we are at present aware this is true only of foodstuffs of animal origin. The vitamins are synthesized only by plant tissues and their presence in foodstuffs of animal origin will depend on the diet of the animal. It is therefore not safe to assume that all samples of butter and milk have high vitamin value, since the

amount of these accessory substances present will depend entirely on the food of the cow. In collaboration with Dr. Zilva, Capt. Golding and Miss Coward, I have recently shown that the amount of the so-called vitamin A present in butter or lard may show marked variations traceable in the diet on which the animals have been fed, and similar observations have been made in the United States on the anti-scurvy potency of milks derived from cows fed on different rations.

There will be in my opinion a very important consequence of this discovery when the true significance of these remarkable dietary factors is grasped by the public health authorities. It will concern the establishment of a method for standardizing the vitamin content of certain foodstuffs, particularly of butter and milk. It will be obvious how relatively unimportant would be a quibble over a small difference in the percentage of moisture in a sample of butter, if the value of the butter as a source of the growth-promoting factor were neglected entirely.

Finally, I would like to draw attention to the question of proprietary vitamin preparations which are already appearing on the market in considerable numbers. It is going to be a very difficult matter

for the public to distinguish the good from the bad amongst these products. Of those which have already appeared there are several which I have found to be entirely inactive, and which are therefore being supported by inaccurate claims; whilst others are more or less genuine in that they can act as sources of one or other of the vitamins. The aim of the patent food manufacturer appears to be put on the market a preparation for which it can be claimed that it supplies all three vitamins in a concentrated form. It is perhaps unwise to criticise this aim too severely, for there may be a real but limited need for such a product; as for example, to supply the requirements of exploration parties. The general attitude of the public towards proprietary vitamin preparations should be a guarded one, since it must be remembered that on every hand may be obtained cheap and natural sources of these indispensable substances.

If the people would only recognize the indispensability and irreplaceability of the natural foods, and eat more fresh vegetables (watercress, salads) fruit, milk and eggs they would have no need under ordinary circumstances to purchase expensive and possibly inefficient proprietary articles, nor to worry very much about vitamins.



Vaccination and Anti-Vaccination in England.—A writer in the *International Journal of Public Health* states that vaccination in England has gone down, though not out. Most people regard it as they do the door marked "Emergency Exit" in the theatres. The anti-vaccinationists have been so active and this movement has become so strong that it is a national problem. The author advances the theory that if the medical profession had been more closely united in the cause of public health, beginning forty years ago, the public could have been

better educated to realize the possible dangers of lack of vaccination. There is now, however, nothing to do but wait for a lesson which will bring people to their senses. London, for instance, offers a field for a disastrous outbreak, which would be extremely difficult to cope with. The English problem is a good example of what the United States can expect unless health officials are on the alert to combat the false doctrines of the anti-vaccinationist.—Stephen Paget, *International Journal of Public Health*, March-April, 1921. (J. A. T.)

SANITARY INSPECTION—A REVIEW

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In a rapid survey of the field of sanitary inspection, the author suggests shifting the emphasis by health officers from the legal and technical to the human aspects of the problem. By outlining the status of each he concludes that the technology receives more attention than do the people from many public health workers. It should be kept in mind that permanent health improvement must be predicated on the awakening of a sanitary conscience.

“**E**DUCATION is better than legislation. It is slower, but surer.”
—C. V. Chapin.

1. The Legal Aspect of Sanitary Inspection.—In order to define the principles of law upon which the activities of sanitary inspection rest, it is necessary to have clearly before us what the function of sanitary inspection is. A fairly definite conception of this function may be obtained from the knowledge that, in almost all government action concerned with the preservation of the public health, the idea of nuisance has assumed an important place. The field of activity of sanitary authorities, therefore, has been developed through legal precepts, which have restricted this field to the investigation of nuisances. This restriction is, of course, not a narrow one, since it permits of the control of practically all those elements which affect the health of the community.

A nuisance may be defined as any condition which annoys or gives trouble. In the more restricted phraseology of the law, it becomes anything which is detrimental to persons or property. The importance of a nuisance is determined usually by the number of persons whom it may affect. The simplicity of this fundamental principle of the law of nuisances is apparent. The complexity of current legal controversies into which

local health authorities are frequently led rests more upon the inability to allocate the condition in question to the class of nuisance, than upon the failure to motivate the wheels of the courts.

A mere definition of terms, however, does not clarify sufficiently the legal concept of nuisance which every health officer should have. We must employ some yardstick, some measure, however qualitative, other than that of the chronic pessimist to whom everything and everybody is a nuisance, or of a Ruskin who viewed the entire industrial development as one despicable, though massive, nuisance. For the purpose of our present discussion the simplest summary of nuisances resolves itself into two contrasting types. Of the first type, the so-called legalized nuisances are to be considered. This class rests for its sanction upon “the principle of the greatest good of the greatest number.” Acts which come under this sanction are protected usually against indictment or civil suit. For, although legislatures may not arbitrarily violate rights of private persons, they may and sometimes do secure a public benefit, even though at some sacrifice of individual comfort and convenience.

On the other hand, legislative enactments often come to our aid through the authorization to local bodies to declare acts, practices or things to be nuisances.

Such nuisances are the complement of the first type mentioned above and are designated as statutory nuisances. Legislative authorization at once supplies the health officer with an asset greater than that already granted him by the precepts of common law. Statutory nuisances so-called have their origin in the principle that legislatures have the right to enlarge at any time the category of public nuisances. This legal principle has been one of the saving clauses in the development of a machinery continually growing to meet the needs of an advancing sanitary science. For what is not a nuisance today, in our present state of knowledge, may become one tomorrow, as the unknown is further probed. Legal support, though delayed, usually has followed closely upon the emergence of scientific truths.

Two additional questions remain to be answered in our survey of the legal background of sanitary inspection. These are concerned with the responsibility and the remedies for nuisances. Here again, stripped of its professional phraseology, a simple axiom appears, namely, he is responsible for a nuisance who either creates or continues it. It is hardly desirable on this occasion to attempt to illustrate the varied possibilities in such cases as joint liability, liability for letting premises with a nuisance thereon, for the continuance of a nuisance, the liability of a tenant, municipal responsibility for nuisances, etc. When such cases occur in the routine activity of the health officer, their consideration rests upon the principle already enunciated. The difficulties of fixing responsibility for nuisances are dependent upon local conditions and need not be discussed at this point.

With a nuisance defined and the responsibility therefor fixed, what legal recourse is available for the determination of a remedy? Fortunately sanitary law presents several different kinds of remedies based upon private and public action, under either civil or criminal procedure.

These may include either suit for damages, injunctions, or fines or combinations thereof. Since health authorities frequently adopt the procedure of a suit for the collection of a penalty for the violation of a health ordinance, it is apparent that the strength of such ordinances lies in their penalty clauses. These penalties, of course, must vary with the importance of the offense, for if they are too heavy, though impressive, they are rarely enforced.

Now that the basic principles of sanitary inspection law have been outlined, though crudely, it would be interesting to learn what direction sanitary legislation should take in the future. Are our health laws too general or too specific? Should future laws accurately define nuisances, a procedure which some co-workers maintain the scientific knowledge of methods of prevention of disease now makes possible? Are general powers necessarily coincident with uncertainty of action? Do local health officers find it easier to enforce specific acts or generalized laws? Do necessary health reforms wait upon crystallization of support in the form of statute or law, or upon that underlying and more elusive element—public sentiment, which frequently is lacking even when law exists?

In the problems of sanitary inspection, however, the legal aspects, though interesting and often puzzling, form only a part of a survey. For the legal power to act is useless in the absence of the technical apparatus with which to inaugurate such action and without the scientific data for the recognition and elimination of the objectionable thing or condition. It is clear, therefore, that for sanitary inspection to be effective it must be built firmly upon a definite technology, upon a series of scientific facts and observation. Of what then does this technology of sanitary inspection consist?

2. The Technology of Sanitary Inspection.—Sanitary inspection needs, for the successful accomplishment of its

purpose, more than pure technique or a method of activity. It demands rather a technical background, a systematic knowledge of scientific facts, an array of data selected from the laboratory of experience. (It requires above all, of course, on the part of the persons delegated to carry out its duties, an unusual equipment of tact, good judgment, common sense, and a sense of proportion. A consideration of these more personal attributes is deferred to a later section of this paper.) Has present-day sanitary inspection this technical background, this scientific basis? To answer this question, we must analyze carefully the content of the technology of sanitary inspection. For such a purpose, we may subdivide our activities into two fields, one concerned with extra-mural and the other with intra-mural sanitation. In the first case, we are concerned with the problems of the outdoors, in the second with the indoors. Whether these locations have reference to house, school, canning house, construction camp, mining shack, or hospital is of little import, since the primary technical facts in each instance are the same. The sanitation of the environs of the school, in so far as the elements of design or construction are concerned, is the same as that of the mining shack. An evil-smelling privy is the same whether it stands in front of a hospital or in back of an Italian's shanty. The scientific knowledge which will cause a transformation in the one, will result also in a modification of the other. Likewise, the technical facts which we use in the solution of the problems within the house, apply with equal force to those within the school or hospital. Changes in detail there may be, but fundamental data as to material sanitary problems are not dependent upon kind of property, but upon nature of problem. Therefore, in succeeding discussions, where reference is made, for example, to ventilation, to sewage disposal, to plumbing, the conceptions and the problems should be thought of in

general terms, rather than in specific application to school house or to construction camp.

To sanitary inspectors, the sanitary privy is at the same time a bane and a delight. Without it, he is jobless and with it he is nervous. The sanitary inspector hence appears as a new Diogenes in search of an honest privy. His utopia would be that spot upon which rests the "practical sanitary" privy. Dr. Stiles has recently drawn up general specifications for such an inspector's delight.¹ They are excellent enough to repeat at this time.

"From the standpoint of the average person involved, the word 'practical' means that (1) the original installation must cost little or nothing; (2) the privy must require no upkeep; (3) it must require no cleaning; (4) it must be without undue odor; and (5) it must be 'fool proof.'

"From the viewpoint of the health officer, a privy to be practical must be one: (1) which he can induce landlords to install; (2) which must be in keeping with the pocketbook of the poor; (3) which must not inhibit subsequent adoption of a sewer system; (4) which must be within his budget to administer; (5) which must not make too many enemies in the population; (6) which must not raise too much political antagonism; (7) which must last as long as required; and (8) for which he can obtain labor if it requires scavenging."

Is there such a privy in existence? Will there ever be? And, lastly, do we need one? In examining Dr. Stiles' specifications, and they represent those of most of us, we may distinguish two requirements, one of which is concerned with design, construction, and operation and the other, and more important one, with people and their mental attitude. The first only is our present concern, the second will be discussed later. It is believed we are safe in assuming that the elements of privy design, construction and maintenance, are at least theor-

etically definitely known. It is possible to design a privy anywhere, which under reasonable conditions will give satisfactory service. It is true there are such places as China where the technology of individual sewage disposal is but little understood, because of peculiar economic and racial conditions. But for general American problems of rural sewage disposal, a technical solution of fair character exists. It is well to emphasize this point in order to clear the path for what is to be said later. The fact that it is often difficult if not impossible to obtain satisfaction from existing types of privies should be ascribed, it is believed, not to fallacies of science, to failures of design, but to more dangerous failures, those failures to familiarize human minds with structural panaceas.

It seems hardly necessary to enumerate a series of types of sanitary privies in order to illustrate the technical advance in their design. The outstanding feature of many symposiums on sanitary privies, where privy design is shuttled back and forth, appears to me to confirm the diagnosis given above, that the problems of sanitary inspection are after all not those of materials, but of men. It should not be understood, of course, that the theme of this discussion rests upon the hypothesis that the technology of sanitary inspection is complete. It is not and probably never will be. But the health officer surely has available already a mass of facts, of figures, of theories to guide him in the technical performance of his duty, where this is concerned only with the class of nuisance. The knowledge of what to do technically in this field seems to have gone far ahead of the knowing how to do psychologically.

This feeling has its source in the observation of the narrow clinging to simple technical solutions at the expense of broader viewpoints and may be illustrated by reference to a particular problem. The literature and discussion of

privy installations have always placed considerable emphasis, particularly in the South, upon the constructions of large numbers. Even in communities of 5,000 people or more, intensive privy campaigns still hold sway. A natural question often arises as to why such enormous makeshifts are still employed. Is it not often extravagant and foolish to install 2,000 privies in a community where a complete sewerage system would be cheaper, saner, and cleaner? In many instances, it is not realized that the total annual cost to individual homes for decent scavenging and construction and maintenance of privies is as great or greater than that due to the installation of a modern sewerage system. Some actual figures may demonstrate this fact more clearly. The following annual costs for scavenging were obtained from some of the smaller communities in Maryland. They are:

Brentwood	\$ 3.00 to \$12.00
Capitol Heights	4.00
Cottage City	6.00 to 12.00
Garrett Park	12.00
Kensington	6.00

These costs represent examples of night soil collection and disposal per house for can type, surface type, and cesspool installation.²

Contrast with these figures, the situation in these same communities after they have been combined into one district,² when the gross annual cost to a householder, with a fifty foot lot, a \$4,000 house, for 40,000 gallons of water service and the collection and disposal of all sewage, with a complete water and sewerage system, varies from only \$15 to \$20 per year. And this cost appears in a sparsely built suburban territory, where conditions are least favorable to low costs of water and sewer service. It would be interesting to learn whether in such extensive privy campaigns as here referred to any thought has been given to preliminary cost estimates of privies against sewerage system, where first costs, replacements, and general operation are

taken into account. In many instances, such comparisons do not seem to have been made.

By way of digression, it is of interest also to call attention to the rarity of the idea of combining a number of communities for sanitary purposes. Here, too, local technical solutions again overshadow the more important comprehensive improvements which the formation of sanitary districts call forth. For those health officers from territories, where it is believed the Sanitary District idea has not yet made much progress, the desirability of consolidation of towns for health purposes cannot be too greatly emphasized. Such combinations mean savings in cost and in lives. Their simplicity of development may be illustrated by sketching a district, which just now is in the very early stages of initiation, but whose proposed organization is founded upon one already in existence.² It has not yet progressed beyond the point of technical study. This particular example indicates the wisdom of considering neighboring communities from a broader standpoint than that presented by town limits.

In the Georges Creek Valley in the western part of Allegany County of Maryland, there are to be found about fifteen communities stretched along the Georges Creek for a distance of approximately 20 miles. These communities vary in size from several hundred to 7,000 persons. From one end of the valley to the other there lives a population of about 30,000. No single one of these communities has sufficient funds to provide itself with adequate water supply and sewerage facilities. The installation of sanitary privies and makeshift water supplies in these individual communities does not offer an economical or satisfactory sanitary solution to the problem. For this reason, it is the intention of the Maryland State Department of Health to initiate the formation of a Sanitary District to embrace all of the above communities. Such a consolidation of com-

munities has already been successfully accomplished in the Washington Suburban Sanitary District, previously mentioned in this paper.

Where such combinations of projects are possible, and they are frequently apparent in places where each town is struggling by itself to install and maintain a privy system, the financial burden upon individual property holders is materially reduced. By proper distribution of cost, the sanitary improvements brought about by district methods result in much less expense than the average householder uses annually for minor amusements. By properly allocating costs through an equitable system of payments, which need not be gone into here, the opposition in a series of communities to supposedly enormous expenditures of several millions of dollars for water supply and sewage systems often disappears. Such comprehensive schemes as outlined above may often be substituted for disconnected and isolated community privy treatment.

In the case of intra-mural or indoor public health technology, the development of standards has not been so complete as in the outdoor science. The elimination of objectionable conditions within the school, hospital or home is usually predicated upon empirical facts and ill-tested hypotheses. Even today the physiological bases for good, bad or indifferent ventilation are incomplete. This situation is reflected clearly in the difference of attitude exhibited by most health officers toward ventilation problems as contrasted with problems in the disposal of human excreta. Today the chemical theories of bad air still persist, for as late as 1918 a health officer made a lengthy report of moving picture ventilation in which carbon dioxide standards predominated. Although it is gradually being realized that ventilation is concerned with physics rather than chemistry, with air movement rather than air content, and is dependent upon cutaneous rather than physiological reactions, yet

the complete understanding of these processes is so far removed that, in this case, the health officer must wait upon technical advance for the complete solution of his problems. Fortunately the absence of such complete solutions does not retard the development of sanitary activity, for a sufficiently large body of facts, though incomplete, are at hand for support.

In the same way, housing regulations as to standards of space and light leave something to be desired, in view of the fact that the effects upon the human organism are problematical. When we pass from these more complex problems of mental and physical reactions, to the more simple question, for example, of plumbing, a similar lack of basic facts appears. It is important to contrast the states of technology of indoor and outdoor environmental factors and to evaluate their effects. For it must be borne in mind that, in the case of the outdoor environment, the sanitary inspector's activity has been longer, in time, than with indoor conditions. The demand for an outdoor technology has been greater during a longer period. Hence its development has been more rapid and more complete than that of the indoors, where the effects of space, light and air conditions have only comparatively recently been emphasized from the standpoint of health. That this diagnosis of the inadequacy of current scientific data on indoor environment is probably correct will appear, for example, from a random examination of a series of housing regulations as to floor space and air content per person. It would be interesting to learn how the standard regulations, for example of temperature and humidity are determined upon by different states, municipalities or counties.

The above general and necessarily brief sketch, of the second phase of sanitary inspection, the technical, brings us to a third and most important division of the subject, namely:

3. The Philosophy of Sanitary Inspection.—As a particular field of sanitation develops, it is often of value to view its problems in retrospect in order to plan their solution for the future. In many discussions of sanitary inspection this failure to review and to plan, upon the basis of history, results in immeasurable loss to all concerned. The problems of sanitary inspection have much in common with those that have arisen in other fields. Their analysis should lead to a philosophy of action, just as the analysis of a problem of calculus leads to its solution. Let us attempt such an analytical study.

The problems which are under discussion have passed or are still passing through one of three stages. A primary stage of recognition, a secondary of technical development, and a tertiary of activity of application of the solutions developed in the second. Before sanitary inspection could exist, it was necessary for people to recognize that there were problems of excreta disposal, of bad water supply, and of malaria control. As long as the memory of man will go, the problems of sanitary inspection have been accepted. As our knowledge advances, the recognition of new problems of public health will advance. Following close upon the recognition of problems, there comes their technical solution. As the writer has already attempted to show, these technical solutions will be in process of study forever, but enough are already available for the advent of intensive application. It is apparent, therefore, that, although each of these three phases of sanitary inspection may, chronologically, merge into each other, yet we may safely conclude that today only the third phase, of application, is of prime importance to the practical health officer. The public at large has not yet reached completely the first phase, that of recognition. The research student is submerged in the second, the technical; while the health officer, the advance guard,

should enter the third stage to bring about the adoption of scientific methods for the elimination of disease.

Now that we have definitely located or oriented ourselves in our own microcosm of sanitation, let us proceed upon our task of formulating a philosophy, a future policy or basis of sanitary inspection. In the past we have been concerned with standards of design and construction. Our mental energies have been focused upon problems of materials, of things, of structures. At many times, in our haste to formulate new designs, to install more privies, to make more housing regulations have we not forgotten our real standards? How often do standards of design conceal the only standards worth while, those of accomplishment? And here it is well to recall that the velocity of sanitary privy construction does not always measure the amount of fruitful work accomplished. For construction and use, alas, are not synonymous. The literature of sanitary inspection is filled with excellent and valuable pages concerned with the privy, but how little do we see of the analysis of the people who are to use them! In the health officer's interminable search for the one best privy, does he often stop by the wayside to ponder upon the frailty of human nature? Most often he worries about the weakness of the E type in contrast with the A or the B. It is by no means a strange or startling statement to make at this time that after all the type of privy means little or nothing in the progress of sanitation. The human type is the important element and not the privy, or the manure pile, or the fly. These latter elements are environmental only. How useless it is to attempt to control these, when these in turn are controlled by man, who alone is not subjected to study, to analysis, to minute design and re-design, to modification after modification. Attention is showered upon the material, while the family remains an appendage, an incidental.

As long as the sanitary inspector views

man as a stubborn obstacle standing in the way of sanitary progress, rather than a living organism blindly groping for brilliant sunlight, just so long will real progress be slow, difficult and disheartening. Just so long as the engineer permits the slope of a sewer line to assume more importance in his calculations than the weaknesses and the instincts of human beings, that is how long our road will seem dark and dreary. For after all, are sewer lines and privies and plumbing codes our only concern?

Whether we believe in trade unions or open shop, in bolshevism or monarchy we must recognize their existence if we are to carry forward our work. The day is definitely passed when the only factors in sanitary inspection are legal and technical. To this category must now be added a new phase, the human side. The old science, to paraphrase Dr. Osler, must be linked with the new humanities. We have long recognized the primary elements of design, now we must begin to study just as closely the primary instincts of people. Our progress depends upon the recognition of the existence of factors other than those of the science of structures.

It has been a source of curiosity to the writer as to how often so-called privy campaigns are predicated on a study of the psychological, physiological, and economic conditions of a community. Are there any instances where the nature of peoples has predetermined the line of attack, rather than the existing standards of design? Does the sanitary inspector vary his privy design for Pole, Jew, Irish or Italian? Obviously the demands of these races are different, their reactions are varied, and their tempers innumerable. It is difficult to expect centuries of custom to give way to two weeks of Yankee privy campaign, no matter how well planned and conducted. If privy design is not varied, and human nature is untouched, why should failures surprise? We are rarely disconcerted if a single suit of clothes does not fit the stalwart

Swede, the slim Italian, or the anaemic Jew.

When the lowly "polack" of steel town appears as human brother, or the coal miner as something else than a war-time plutocrat, when intolerance gives way to understanding, perhaps then some of the thousands of privies built will be used for something other than coal bins.

When this socialization of viewpoint appears, when society becomes more than a mere hunting ground for nuisances, then it is believed a newer and better philosophy of sanitary inspection will appear.

ADDENDA

1. Practical Types of Sanitary Privies, by C. W. Stiles, *The A. J. of PUBLIC HEALTH*, Vol. 10, No. 1, January, 1920.

2. The cost data here presented have been obtained from the "Report on the Advisability of Creating a Sanitary District in Maryland, Contiguous to the District of Columbia" to the General Assembly of Maryland by the Washington Suburban Sanitary Commission (Chief Engineer, Robert B. Morse), on January 21, 1918.

The Washington Suburban Sanitary District embraces the suburban areas in Montgomery and Prince George's Counties in Maryland,

contiguous to the District of Columbia. The District was incorporated by the State Legislature (Chapter 122 of the Acts of the Maryland Legislature of 1918) for the purpose of the establishment and operation of adequate water, sewerage and refuse disposal systems. This District has an area of 95 square miles and a population of nearly 50,000, which is rapidly increasing.

The administration of the District, with respect to the control of water supply, sewerage, and refuse disposal systems, is in the hands of a joint commission of three members. During the period from May 1, 1919, to April 30, 1920, approximately \$512,000 has been expended by the Commission for public improvements. The Commission has the power to issue its own bonds.

3. The following texts were freely drawn upon for the section dealing with the legal aspect of sanitary inspection. The authors of these texts are responsible for whatever is accurate in the discussion. If the exposition departs anywhere from truly legal principles, I alone have the burden to bear.

(a)—J. Scott MacNutt, *A Manual for Health Officers*. New York: J. Wiley & Sons.

(b)—H. B. Hemenway, *Legal Principles of Public Health Administration*. Chicago: T. H. Flood & Co.



The Nurse in the Virgin Islands.—The value of the Public Health Nurse is appreciated in newest America as is shown by an informative article on "Public Health Activities in the Virgin Islands," by Hannah M. Workman.

Here are islands lately acquired by the United States which during the Danish occupancy had hospitals but no trained nurses. The disposition to accept modern methods has long been present there and so, when the Americans assumed control, one of the first requests was for American nurses.

Since 1917 nine carefully chosen navy nurses have been at work under supervision of American Naval Medical men in the Virgin Islands. In addition to these nurses, there have been comparatively recent appointments of Red Cross workers. How

eager the people are for the latest developments in public health work has been shown, though this is not mentioned in the article, by the visit of one of the nurses at the headquarters of the Mothercraft movement in Massachusetts to secure material and literature for teaching girls and young women the proper care of babies.

This progressiveness in studying advanced methods in the United States is illustrated in the islands, by the admirable hospitals and classes for training nurses; by the infant welfare department; by the public health nurses and the general sanitation and cleanliness which are remarkable for a tropical country.—Hannah M. Workman, *Public Health Nurse*, April, 1921. (*M. B. D.*)

WHAT HEALTH OFFICERS CAN DO TO PROMOTE RAT EXTERMINATION

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Rats are a civic reproach and a sanitary menace of the first magnitude, not merely an unavoidable economic burden. Health officers everywhere must be active because civilization demands the coöperation of all forces in the removal of the rat menace to health and well-being. This paper outlines well-digested plans for efficient warfare on the rat.

WHILE the rôle of rats as carriers of disease is only partly determined, sufficient is known to mark these animals everywhere as perhaps the greatest single menace to the health of the human race. From their original Old World habitats they have accompanied man in his migrations, and have infested his habitations or their vicinity in spite of measures taken against them from time to time, until they now are firmly intrenched as human parasites, and they maintain this repugnant relation with a tenacity truly remarkable.

ENDEMIC PLAGUE AN AMERICAN MENACE

The best-known rat-transmitted disease, bubonic plague, has caused the deaths of millions of people since the beginning of the Christian era. This disease carried from endemic centers in the Old World manifests itself by periodic and alarming outbreaks, and evidences a tendency to form endemic centers of contagion even in America. Bubonic plague is ordinarily transmitted by fleas which have become infected from rats.

Aside from bubonic plague, rats are known to be involved in the transmission of trichinosis, infectious jaundice, and rat-bite fever, and owing to their filthy habits they are potential agents in the

distribution of many other diseases, their exact relation to which remains an important field for laboratory investigation. Infectious jaundice is probably due mainly to rat contamination of food, except possibly in certain Asiatic countries where some recent evidence suggests that poorly-shod natives, especially in coal mines, also receive the spirochætal infection directly through the skin. This disease has been generally associated with armies holding rat-infested trenches along stabilized war-fronts, hence the name "trench jaundice," also commonly applied to it.

Bubonic plague, or a plague-like disease, has been communicated probably through use of the same burrows to ground squirrels (*Citellus beecheyi*) and wood rats (*Neotoma fuscipes*) in California, and the infection is reported* to have been detected in a rice rat (*Oryzomys palustris*) at New Orleans. The ground squirrels and wood rats are widely distributed, especially in the western United States, and the rice rats occupy parts of the Mississippi Valley and much of the Atlantic seaboard from Texas to New Jersey. It should be borne in mind that the house rat, along

*Williams, C. L., Amer. Jour. Public Health, vol. 10, No. 11, p. 863, November, 1920.

with the wood rat, the rice rat, and various other indigenous American forms, belongs to the murine family, and if plague among these animals is allowed to progress unchecked it may also reach our woodchucks (*Marmota*), which with our numerous ground squirrels are closely allied to Asiatic rodents believed to be natural enzoötic hosts.

Under ordinary conditions rats tend to keep pace in numbers with the increase and congestion of the human population, an aggravating modern factor. Unless house rats are controlled the probability of the establishment in America of plague centers very difficult to eradicate and from which epizootic outbreaks would lead to wide-spread human mortality seems reasonably certain.

LIFE HABITS OF RATS

Some knowledge of the life habits and practical methods to be employed in the control of rats is essential and should be acquired by every health officer. In fact instruction in this branch might well form a part of the curriculum of every public school, until rats are no longer commonly regarded as an unavoidable evil.

Two species of rat, somewhat different in habits and both potential carriers of bubonic plague and other diseases, are to be dealt with. These are the brown rat (*Rattus norvegicus*) and the black rat (*Rattus rattus rattus*), of which the so-called "roof rat" (*Rattus rattus alexandrinus*) is merely a variety. The brown rat, usually the more important of the two in America, is, excepting in certain individuals in a peculiar black color phase, readily distinguished from its congeners by general brownish color of back, in combination with larger size, more robust form, smaller ears, and relatively or actually shorter tail. In adult brown rats, the hind foot usually measures over 40 mm., and the tail is shorter than the head and body together, while in the black species the reverse is true. The brown rat is largely a burrowing animal

and lives mainly near the ground, especially in the vicinity of water, where its holes and well-beaten paths are often much in evidence; the black species, a more expert climber, is more apt to inhabit the roofs or upper floors of buildings, and is usually the more abundant of the two aboard ships. Where food supplies cannot be isolated the importance of killing the early arriving individuals by any possible means will become more evident when it is remembered that the period of gestation is only three weeks, and that a female brown rat three months old is likely to bear and may be expected to produce 6 to 10 young at a birth under ordinary climatic conditions. Litters, however, commonly contain more than ten. Rats probably produce ordinarily from three to five litters in a year, but where food and shelter are abundant the number of litters is increased.

Computations based on the assumption that rats breed only three times in a

FIGURE 1



One of thousands of well-defined rat paths leading from garbage dump into grain fields. By the number of such paths and holes with which they connect, the health officer may estimate the degree of infestation.

year, with average litters of 8, divided equally by sexes, with no deaths, reach the astounding total increase for a single pair and their progeny in three years to over 3,900,000 individuals. The mortality rate is obviously high or rats would soon literally overrun the earth.

RAT PREVENTION

All efforts to control or exterminate rats should be aimed at one or both of the two vital elements, food and shelter. Eliminate either of these completely and the problem is solved. Reduce either of these elements materially and a corresponding diminution of the rat population normally results. Rats are omnivorous and are soon attracted to any accessible food supplies, and if shelter is also available they very quickly build up large colonies.

Much has been written on modern rat-proofing methods, and these cannot be too strongly stressed, but only the general principles involved need be stated here. Traps, poisons, and other effective agents in rat destruction will be of little permanent value in most localities unless food warehouses are so constructed as to bar the entrance of these animals, and food supplies made inaccessible everywhere. Rats kill young chickens, and for this reason and to eliminate shelter for them, poultry houses, barns, and all out-buildings should be carefully closed to them. No garbage or trash piles should be allowed to accumulate in the vicinity of stores, markets, or human habitations, and loose material should be kept cleared away as far as possible. The rat-proofing of structures should precede or at least accompany all rat-killing campaigns.

In one of our great army depots in France millions of dollars' worth of supplies attractive to rats were stored in temporary structures, where under stress of war conditions rat-proofing was out of the question; but from the beginning the policy was adopted of keeping the ground as clear as possible in and about

the buildings and of turning over at intervals the great stacks of food supplies. This depot was located in the interior of the country with no heavily infested area near, but the district was well settled and rats in usual numbers were living about neighboring farms. A few, as might be expected, entered the depot of their own accord, and others were carried in with freight shipments from the base ports and in cars returned from the front. Although food supplies were easily accessible, the number of rats gaining a foothold in the depot was almost negligible. The importance of eliminating rat-harborage was strikingly demonstrated.

EFFICIENCY ESSENTIAL IN RAT CONTROL

The vital importance of eradicating rats being obvious from the sanitary as well as from the economic viewpoint, the practical problem is how to deal with the pest most effectively. All health officers, Federal, state, or municipal, should devote especial attention to rats, and be prepared to deal in the most efficient manner with the varying conditions encountered.

As a preliminary measure rats should be prevented from landing at the ports. All vessels should be fended off at least 6 feet from docks; all shore lines should carry metal discs 4 feet in diameter, to block the passage of rats; gangways should be raised; and other shore connections severed as far as possible at night. In addition all ships and cargo should be thoroughly treated as often as practicable with hydrocyanic acid gas or some other effective fumigant. In spite of all precautions, however, some rat stowaways are sure to find their way ashore, but by eliminating food and shelter, conditions should be made as uncongenial for them as possible.

The methods to be adopted in each locality or rat-infested center should be based on local examinations, as a physician diagnoses cases, and the remedy prescribed in accordance with conditions prevailing. Rat warfare is costly and

much time and money have been wasted in misdirected or inefficient methods of attack. Success will most readily be achieved where there is proper organization and where concerted efforts are based on definite plans persistently carried out. Little of permanent value will result from even a wholesale destruction of rats in a given locality if the rat-proofing of premises is neglected and neighboring areas remain heavily infested.

Rat campaigns should be organized and directed by sanitary officers familiar with the best methods and thoroughly trained in such work, all governmental agencies coöperating as fully as possible. These officers should be assisted by a corps of the most competent men obtainable, and provided with the necessary supplies in ample quantities.

The first step should be the division of the area to be treated, whether a city, county, or state, into districts the size of which will vary with local conditions and available personnel and equipment, the total area to be the largest that can be effectively handled as a unit. District

leaders should be then assigned and a district organization perfected, the men employed in destruction work being chosen with due regard to fitness. In general they should be men with a natural aptitude or liking for such work.

FIGURE 2



City garbage dump maintaining thousands of rats surrounding incinerator that proved to be a failure owing to poor construction.

At the same time a publicity service or educational campaign should be carried on by means of posters, through local newspapers, and with the aid of well-informed public speakers if possible, the

FIGURE 3



Another view showing one day's accumulation of refuse and garbage in same place. From this dump thousands of rats invaded adjoining grain fields and many passed on into the city seen in distance, until controlled by use of barium carbonate under the direction of the Bureau of Biological Survey.

aim being to focus the attention of the public on the objects of the work, and enlist local interest and coöperation, especially in the formulation and enforcement of the necessary ordinances covering garbage disposal and the construction and rat-proofing of buildings.

The work once begun should be prosecuted vigorously and thoroughly, rat-proofing, elimination of all rat shelter, care of garbage, trapping, and poisoning operations being carried on simultaneously at as many points as possible, covering in a general way the entire area. There is a popular prejudice against the use of poisons, but where rats are present in large numbers recent experience has indicated the advisability of their employment under properly controlled conditions. The use of gases also may safely and advantageously be resorted to in places, the object being to neglect no destructive agent that will facilitate or hasten the extermination of the enemy. The bacteriology of plague and other rat-borne diseases should be thoroughly understood and a standardized technique covering the determination of these developed by a competent staff. Laboratory studies should be systematically carried on, especially in every large seaport in the country, in order to anticipate epidemics and furnish a record of progress in dealing with this phase of the work.

SYSTEMATIC TRAPPING EFFECTIVE

One of the best-known methods of destroying rats is systematic trapping, in the direction of which every health officer should be an adept. This means usually the placing of traps in considerable numbers and in accordance with definite plans. If the area to be covered is large and the rats numerous thousands of traps may be required. Much time and effort is frequently wasted in desultory trapping at poorly-chosen points, or with traps of an ineffective type. In a properly organized campaign, traps will be set at fairly regular intervals in places most likely to be visited by rats, depending of course upon the degree of infestation. In general these will be at or near

entrances to buildings, or to rat burrows, along walls, or wherever there is evidence that rats are in the habit of passing.

Where traps are being placed in large numbers, some system of marking their location, depending upon local conditions, should be adopted in order to save time and the loss of traps. In or about warehouses numbers marked in chalk may often be used, and traps should be visited in the same order in which they were set.

The use of cage traps may be desirable in places in order to secure material for laboratory examinations, but for general destruction work snap traps of several designs are much more effective. The particular type of snap trap chosen should be one in which the trap will be sprung by a rat in passing and the animal caught regardless of whether it was attracted by bait. This is best accomplished by selecting a trap combining some means of fastening bait with a low, fairly broad treadle or an elevated wire released by the animal in passing underneath. Barrel or pit traps and similar devices may be used to advantage for catching rats under special conditions, but they are usually clumsy in operation and unless the animals are very numerous the results are apt to be disappointing and out of proportion to the efforts expended.

A striking example of results that may be attained by systematic trapping was furnished at the Bush Terminal Warehouses in Brooklyn, New York. These warehouses, extending for a length of 11 city blocks, with a depth of from one to three blocks, were taken over by the Government for war purposes and were found to be infested with thousands of rats. At it was planned to use them for carrying a 30 days' supply of subsistence and clothing for the overseas forces, the need of protection against rats was obvious. At the request of the quartermaster officer in charge, a representative of the Bureau of Biological Survey, U. S. Department of Agriculture, was detailed in January, 1918, to inspect the buildings and to recommend methods of

controlling or eradicating the rats. Six or eight gross of snap traps recommended were purchased and four men set to work placing them, with the result that each day's catch was at first more than a barrelful. At the end of the year the officer reported that the rat-catching campaign, persistently carried on, had reduced the rats to a negligible number and an inventory of supplies on hand when the warehouses were 90% filled showed no damage by rats except an occasional gummed label gnawed from the outside of a box. He estimated that between 35,000 and 50,000 rats had been killed and that the military stores destroyed had not exceeded \$50 in value.

VALUE OF POISONS

A popular prejudice against the use of poisons in killing rats is well founded, as the danger of accidents cannot be over-emphasized. With supervision by health officers familiar with their effects, however, the use of certain poisons under favorable conditions is strongly recommended, owing to the large number of animals that may be easily and quickly destroyed. And poisons may often be very advantageously employed at the beginning of a rat-killing campaign which is to be continued by the use of traps.

It often has been the experience of health officers that many poisons, when mixed in killing proportions with food, are readily detected by rats and that the baits are apt to be avoided. The epicurean tastes of rats are well known, and the problem is, therefore, to find baits sufficiently attractive to insure the ingestion of a fatal quantity of poison.

Barium carbonate is apparently less repugnant to rats than most poisons, and when properly administered is exceedingly effective. It possesses also the advantage of cheapness, and if reasonable care is exercised there is little danger from it to human life. Owing to these marked advantages over most other poisons, its general use, wherever warranted by local conditions, is advocated in bulletins containing directions,

issued by the Bureau of Biological Survey, U. S. Department of Agriculture; it is also being exploited commercially on a considerable scale.

The effectiveness of barium carbonate as a rat poison may be judged by some recent commercial demonstration work carried on with the consent and under the supervision of the local health officer in Center Market, Washington, D. C., which covers an area of about one city block. The bait employed was composed of a finely-chopped and very wet mixture of oatmeal, chicken entrails, fish heads, and cooked sweet potatoes, to which was added powdered barium carbonate amounting to 15 to 20% of the whole. At closing time on the evening of October 10, 1920, a tablespoonful of this prepared bait was placed on each of about 500 small wooden butter trays, which were distributed on the floor, where rats are likely to pass, throughout the market. Next morning* 48 dead rats were picked up and photographed, and while 37 others are known to have been killed, the record of the total number destroyed is doubtless incomplete. A significant feature of this work was the fact that the baits were sufficiently attractive to rats, although placed in the open market near easily accessible general food supplies of many kinds.

In connection with the use of barium carbonate, the desirability of placing very wet baits is emphasized, as they seem to be more acceptable in this condition, and some of the poison adhering to the feet of rats is apt to be licked off and swallowed.

Phosphorus is another poison which has been employed successfully in the hands of health officers in rat-killing campaigns, but unless skillfully prepared it may be highly inflammable and therefore dangerous, especially to wooden construction.

*A picture of this killing of rats has been presented in the *News Letter* for February, 1921. The poison was, however, inadvertently stated to be barium chloride instead of barium carbonate.

USES OF GASES

The importance of checking rat immigration at the ports is now generally recognized by health officers, and cannot be too strongly stressed. Stringent quarantine regulations rigidly enforced, and systematic and complete destruction of rats on board ships, are the best insurance against the entrance of plague. For this purpose hydrocyanic acid gas, also used extensively as a highly effective insecticide, is gradually replacing sulphur dioxide, over which it has so many advantages that the two should no longer require comparison. Exposure to this gas is, however, so quickly fatal to all animal life that competent direction of the work is essential as a safeguard against accidents.

Because of its volatility, hydrocyanic acid gas is adapted to use in places capable of being tightly closed, such as the hold or spaces between the bulkheads of a ship. In contrast, heavy gases, such as that generated by carbon bisulphid, may be employed to excellent advantage in treating burrows of brown rats. It is suggested that some of the heavy gases developed for war purposes might be utilized in the destruction of brown rats on a large scale in the sewers of certain cities where they are otherwise difficult to deal with.

SUMMARY

Owing to a strange human indifference to vital interests, which must be overcome through education, rats are still allowed to thrive and multiply exceedingly in many places. This is due chiefly to faulty construction of many kinds, to improper disposal of garbage, and to the prevalence of general insanitary conditions which afford an abundance of food and shelter to the enemy. In the correction of these conditions health officers, federal, state, and municipal, should take a prominent part, and, in coöperation with as many private agencies as possible, organize and carry on such systematic, far-reaching, and persistent

rat warfare that these obnoxious rodents surely will be eliminated.

The control of rats, like that of other undesirable immigrants, should begin with the prevention of their landing at the ports; but this public duty falls to the health officer instead of the regular immigration official. Much may be accomplished by the thorough treatment, whenever practicable, of ship and cargo with hydrocyanic acid gas, or some other fumigant, and the isolation of the ship by means of metal discs on shore lines and by gangways raised at night. Efforts to exclude and to destroy rats should be centered in the seaports, as these are the rat strongholds, and the places where centers of plague infestation tend to develop. This can readily be done only by adopting standardized methods of proved efficiency, to be prescribed in accordance with varying local conditions.

Rats are cunning stowaways and the extension of rapid transit to include the most isolated places will make unremitting vigilance necessary everywhere in order to detect and destroy such introductions, and prevent the establishment of new colonies.

A simultaneous and widespread educational campaign should accompany all rat-proofing and rat-killing operations. Sporadic or incomplete attempts to control rats in particular districts, leaving neighboring areas infested, result in rapid reinfestation of cleared areas and accomplish little or nothing of permanent value. Success will depend upon coördination of efforts, including the enforcement of carefully considered ordinances requiring the rat-proofing of structures in general, until not only whole cities, counties, and states, but eventually the entire country is practically free of the pest.

An effective nation-wide rat warfare will require very large appropriations of public funds, the expenditure of which is justified by the facts that the value of food eaten or destroyed, together with other damage to property by these animals in the United States, is estimated to

be \$200,000,000 per annum, and that the loss to the nation in lowered health and efficiency is incalculable.

With the advance of our knowledge of the life habits of animals, and the complex relationships existing in nature, the general field of parasitology is ever widening before us. The determination of the complete rôle of the rat, the great human parasite, in the transmission of disease is a very important field for further laboratory investigation by health officers, and this should promote the ex-

termination of the animals by emphasizing the danger to which we are exposed.

Rats are no longer regarded chiefly as merely an unavoidable economic burden, in which health officers have little or no concern; instead, their presence is recognized as a civic reproach and a sanitary menace of the first magnitude, engaging the active interest of health officers everywhere. Civilization demands the consolidation of all available forces in the removal of the rat menace to the health and well-being of the human race.



AN ACCURATE METHOD FOR DETERMINING THE ALKALINITY IN HYPOCHLORITE SOLUTIONS

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and

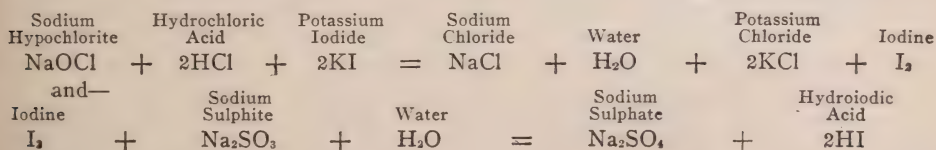
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Read before Laboratory Section, American Public Health Association, at San Francisco, Cal., September 15, 1920.

ANYONE who may have been called upon to make a determination of the alkalinity of a solution of sodium hypochlorite or chlorinated soda has been confronted with the practical difficulty of such a determination. All known indicators of acids and alkalis are almost immediately destroyed by the action of the chlorine upon them. The Columbus Laboratories were called upon a few years ago to make a series of determinations of this kind and the writers devised a method which was found to be rapid, convenient and accurate. This method consists of the removal of the active chlorine and the iodine which it releases by the use of dilute solution of

sodium sulphite in the presence of a known quantity of a decinormal solution of hydrochloric acid and subsequent titrate of the excess of decinormal acid used by a volumetric solution of sodium hydroxide. The difference between the volumes of the hydrochloric acid used and the volume of alkali required to neutralize the excess of acid shows the volume of decinormal hydrochloric required to neutralize the alkalinity of the amount of the hypochlorite solution taken. From this the percent of alkalinity can be readily expressed. The active chlorine is removed by the sodium sulphite according to the following well known reactions:



It will be seen in the above that for every molecule of hydrochloric acid consumed in this decomposition molecules of hydroiodic acid in equal number will be formed. This will react with the decinormal sodium hydroxide in the subsequent titration of excess acid without either gain or loss to the original decinormal acid solution used. The acid consumed by the hypochlorite solution is therefore due to its alkalinity.

Reagents.—

Sodium sulphite—approximately decinormal solution recently prepared from pure crystals.

Potassium iodide 10% solution.

Hydrochloric acid—a strictly decinormal solution.

Sodium hydroxide—a strictly decinormal solution.

Methyl orange 0.1 gram in 100 mls of water.

Method:

The following method of procedure has been found convenient. Add 7 mls of the hypochlorite solution to a tared 250 mls flask and weigh accurately. To this solution add from a pipette 10 mls of the potassium iodide solution and 25 mls of the decinormal hydrochloric acid. Now add the sodium sulphite solution from a burette carefully and lastly a drop at a time until the yellow color of the iodine just disappears from the solution. Then add to the flask 2 drops of the methyl orange and titrate from a burette with the decinormal sodium hydroxide until the acid in the flask is just neutralized.

Calculation.—Subtract the number of mls of sodium hydroxide used from the number of mls of hydrochloric acid taken and multiply the result by the decinormal monatomic equivalent of the kind of alkalinity supposed to be present. Divide the weight of this alkali, obtained by the weight of the hypochlorite solution taken and express the results in per cent of the original weight. For example: weight of the 7 mil hypo-

chlorite solution, 7.3 grams, 20 mls of decinormal, sodium hydroxide required to neutralize the acid remaining in solution after removal of the iodine. Five mls of decinormal acid were consumed by the alkalinity in the hypochlorite. If calculated as sodium carbonate each mil of the acid consumed is equivalent to 0.0053 grams of that alkali. The total amount in the 7.3 grams of hypochlorite solution is therefore 0.0265 grams. This for 100 grams of hypochlorite solution is 0.0037 grams of sodium carbonate and the alkalinity of the hypochlorite solution expressed as sodium carbonate is 0.37 per cent.

Kind of Alkalinity.—The above process shows only the total alkalinity. If the kind of alkalinity is required this must be arrived at independently and by some other means. Thus if it is due to a bicarbonate it will be momentarily alkalin to methyl orange, but will not be alkalin to phenolphthalein. If alkalin to phenolphthalein it may be due to sodium carbonate or to caustic soda or caustic lime. There are means of distinguishing between these forms of alkalinity and when the condition has been determined they may be expressed in the same manner as above. The relations are as follows:

0.1% Sodium carbonate is chemically nearly equivalent to 0.16 % sodium bicarbonate, or to 0.069% Calcium hydroxide.

Sodium thiosulphate decinormal solution may also be used to remove the active chlorine in the hypochlorite solution but the process is more complicated and not so satisfactory. When iodine acts upon sodium thiosulphate it forms sodium tetrathionate and sodium iodide so that we have no free hydroiodic acid formed as when the sodium sulphite is used. For this reason much more hydrochloric acid must be added in carrying out the process and the chances for error from inaccurate solutions are much greater. In trials on the same solution of hypochloric an equivalent of sodium

carbonate alkalinity, amounting to 0.40% was found by the use of the sodium thio-sulphate solution as compared with 0.37% by the use of the sodium sulphite. In this process an equivalent of 79 mils of decinormal hydrochloric acid was required to replace the hydroiodic acid that would have been formed by the use of sodium sulphite and it was necessary to use a half normal hydrochloric acid to keep down the volume of liquid.

A neutral solution of chlorinated soda recently came into our hands which gave a chance of checking up the accuracy of the above described method of determining the alkalinity of this product. This solution of chlorinated soda contained .61% of available chlorine. 50 mils of this neutral chlorinated soda solution was diluted to 250 mils with pure water. 25 mils of this diluted solution was taken for each titration, and the following alkaline solutions were added in duplicate to flasks containing the 25 mils of this solution, the quantity used being given in the table below.

Sodium hydroxide (NaHO).

Calcium hydroxide ($\text{Ca}(\text{OH})_2$).

For this purpose 5 cc. of saturated lime water were used the alkalinity of which was found to be equivalent to 1.8 mils of decinormal solution.

Sodium carbonate (Na_2CO_3).

Sodium bicarbonate (NaHCO_3).

To the solutions containing this added alkali was then added an excess of neutral potassium iodide in solution.

Then 10 mils of strictly decinormal hydrochloric acid were added and the liberated iodine was removed by careful treatment with decinormal sodium sulphite solution.

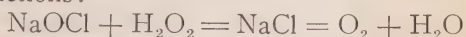
The acid remaining was then carefully

titrated with decinormal sodium hydroxide, using methyl orange as indicated. The results were as tabulated below.

It will be seen from these results that the total alkalinity supplied by the several reagents added, and by the additional decinormal sodium hydroxide required to neutralize the uncombined acid, gave results equivalent to the total amount of hydrochloric acid used, thus showing that the decomposition by the potassium iodide and sodium sulphite is wholly normal.

The significance of the above facts is emphasized by experiments comparing the reactions with those obtained by removing the active chlorine by hydrogen peroxide as has been suggested for this purpose. (Classen's *Ausgewählte Methoden der Analytischen Chemie* Zweiter Band P. 364.)

This method of removing the active chlorine depends upon the following reactions:



The details of operation proposed for this method of removing active chlorine and subsequent determination of the alkalinity are as follows:

To a definite weight of hypochlorite, about 5 grams, is added 50 mils of distilled water. To the resulting solution, 6 mils of a 3% U. S. P. hydrogen peroxide solution is slowly added. After the reaction is completed, which is indicated by the ceasing of the evolution of oxygen, 4 drops of methyl orange solution and a measured excess of decinormal hydrochloric acid solution are added. The residual acidity is then determined by titration with decinormal sodium hydroxide solution. Each mil of decinormal hydrochloric acid solution consumed

Kind of Alkali added	Quantity equivalent of decinormal solution	Decinormal alkali required to neutralize remaining acid	Total alkali required to neutralize the 10 mils. of decinormal acid
NaHO	2.0 mils.	8.0 mils.	10.0 mils.
$\text{Ca}(\text{OH})_2$	1.8 mils.	8.2 mils.	10.0 mils.
Na_2CO_3	0.8 mils.	9.2 mils.	10.0 mils.
NaHCO_3	1.0 mils.	8.9 + mils.	9.9 + mils.

by the alkali of the chlorinated soda solution corresponds to an equivalent of 0.0037 gms. $\text{Ca}(\text{OH})_2$. It must be borne in mind here that hydrogen peroxide is not generally strictly neutral and corrections must be made for any acid present in the quantity taken for use.

When following out these details on solutions of chlorinated soda amounting to the 25 mls obtained as described above, and adding the same quantities of the several alkali solutions as shown in the table, the mixture with these several solutions required of total alkali to neutralize the 10 mls of added decinormal hydrochloric acid, quantities as follows:

- With sodium hydroxide NaOH —10.5 mls.
- With calcium hydroxide 10 mls.
- With sodium carbonate, 10.3 mls.
- With sodium bicarbonate 10.4.

This clearly shows an irregular decomposition in the chlorinated soda molecules whereby the apparent alkalinity is decreased in the case of the sodium hydroxide from 2 mls to 1.5 mls of sodium carbonate from .8 mls to 0.5 mls and of sodium bicarbonate from 1 mil to 0.6 mls which are relatively very large errors. It is only when the alkalinity is due to calcium hydroxide that the correct amount is shown.

So, too, the method of evaporating the

chlorinated soda solution to dryness in presence of ammonia and titrating with decinormal acid and methyl orange, the residue dissolved in water, described by Classen under the same reference, has been found faulty and unreliable especially in the presence of unprecipitated lime.

It should be mentioned in this connection that the method of determining the alkalinity of Carrel-Dakin's solution, by sprinkling dry phenolphthalein on the solution and depending upon its quick action to determine the presence of alkali, is decidedly faulty for the reason that the alkalinity of this solution is clearly due to bicarbonate, and the alkalinity of bicarbonate is not indicated by phenolphthalein. A Carrel-Dakin solution of chlorinated soda, also known as "neutral solution of chlorinated soda," prepared as directed, by the use of sodium carbonate and bicarbonate (see New and Unofficial Remedies American Medical Association, 1918) and which showed 0.48% available chlorine and did not show alkalinity to phenolphthalein, did show an alkalinity equivalent to 0.40% of sodium bicarbonate when examined according to method outlined above, that is, by the removal of the active chlorine by sodium sulphite and subsequent titration by the use of methyl orange.



Deterioration of Typhoid Vaccine.—Officials of the U. S. Hygienic Laboratory carried on experiments more than two and a half years to determine the effect of various storage temperatures on the agglutinin producing properties of typhoid vaccine. Standard vaccine containing 1,000,000,000 organisms per cc. in 0.3 per cent trikresol was used and stored at four different temperatures, 5°C., 10-15°C., 20-30°C., and 37°C. The efficacy of the stored vaccine was tried out on rabbits. It was found that the highest temperatures are detrimental to the vac-

cine, so that the vaccine kept at 37°C. had practically no effect on rabbits after 18 months. The vaccine kept at room temperature had deteriorated more than that stored at the lower temperature in 6 months. The results obtained indicate that the rapidity of deterioration is in direct proportion to the temperature above 15°C. This is, therefore, the best temperature to maintain the vaccine at its maximum potency.—G. W. McCoy and Ida A. Bengtson, *Hygienic Laboratory Bulletin* 122 (July, 1920), U. S. P. H. S. (J. A. T.)

OBSERVATIONS ON DEFICIENCY DISEASES IN LABRADOR

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This observer had the rare opportunity of comparing communities of humans whose dietary could be absolutely determined. The Esquimos on the Labrador side of Belle Isle were able to get food with vitamins enough to protect them, but those on the Newfoundland side, even with milk from underfed cows, had much incidence of deficiency disease.

CHEMICAL analysis and animal experimentation have contributed greatly to our knowledge of the nutritive values of foods. The biological data have, however, for the most part been obtained from observations on small laboratory animals. Broad generalizations cannot be made until the problems of the essential factors in food have been studied also in human beings. Stefansson (*Jour. A. M. A.*, 1918, 71, p. 1715), and other Arctic explorers have described the carnivorous diet of people in Polar regions. Hawkes (*Canad. Dept. Mines, Geol. Survey Mem.*, 1916, 91, p. 29), has given an account of similar food habits of Eskimos in Northern Labrador. Very little study, however, has been made of the clinical evidence offered in the region in Labrador along the Straits of Belle Isle, where the diet is principally cereal and very low in vitamins and where deficiency diseases are known to occur not uncommonly. A study of the exact dietary and extent to which deficiency diseases occur in this region should throw a little light on some of the problems of nutrition.

The conditions fulfill the requirements of a true experiment because the dietary is known. Navigation is closed six months or more during the winter, so that food supplies must be procured in advance and the dietary cannot be changed. The observations to be recorded were made during the autumn,

winter and early summer, 1919-1920, in Labrador along the Straits of Belle Isle, to determine the exact nature of the diet and the incidence of diseases supposed to be caused by a deficient dietary. For comparison a study was made in June of a group of communities on the Newfoundland side of the Straits where beriberi and xerophthalmia were prevalent. The two districts are entirely cut off from one another during closed navigation and could be studied separately and compared to find wherein lay the difference in diet and in frequency of disease.

DIETARY IN LABRADOR ALONG THE STRAITS OF BELLE ISLE

White Flour.—Bread made of bolted wheat flour is the chief article of diet. One and a quarter to one and a half barrels of flour are consumed per person per year.

Meat.—An average family of eight persons has one or two barrels of salt meat, pork or beef, two to four quintals of salt codfish, and one to three barrels of salt herring. Game is the only fresh meat eaten during the winter. Formerly it was plentiful but in recent years has been very scarce. A few partridges are shot in winter and various kinds of water fowls in the fall and spring. Trout are caught through ice holes in the brooks as early as May and cod and salmon fishing begin the end of June, lasting usually

through October. Seal meat is plentiful the first half of June.

Molasses.—Molasses is used for sweetening instead of sugar. Twenty gallons per person is a usual supply for a year.

Vegetables.—A barrel or two of potatoes and a like quantity of rutabagas are provided by the more prosperous families. Dried peas are eaten almost universally. Twenty to forty gallons is a family's supply for a year. Small quantities of rice, onions or dried beans were found to have been procured in a few instances but are not usual. The summer is short and uncertain for gardening, but in the more favorable years enough cabbage may be raised to last until November. Dock and alexander could be used as greens as early as June but are little eaten.

Fruit.—Nearly every family has ten to twenty pounds of raisins and a few pounds of dried apricots or dried apples. The only fresh fruit eaten are partridge berries and another little yellow berry called baked apple. The quantity of berries provided varies, usually only three or four gallons, but in some cases as much as 18 to 20 per family.

Butter.—A butter substitute is eaten almost universally instead of cow's butter. Twenty pounds per person is the usual supply. Poor families had only ten, or even less.

Milk.—Condensed or evaporated milk is used, the sweetened condensed being the most popular. Two cases of milk are considered an ample supply for a family. The poor have only a few cans.

Eggs are not imported and very few natives have hens. Egg powder is used in making cakes for fêtes.

Tea.—Tea is the universal beverage. Ten to 18 cups of tea a day are not an unusual quantity. Bread, tea sweetened with molasses and butter are the basis of every meal. Every family has from twenty to forty pounds of tea a year.

Meat, salt fish, potatoes and dried peas are eaten only once or twice a week and

the supply may become exhausted in April.

EXTENT TO WHICH DISEASES CAUSED BY DEFICIENT DIETARY OCCUR IN LABRADOR

General.—Prolonged and stubborn constipation is almost universal in Labrador. Gastro-intestinal disorders are very common. The children are practically all undernourished and many are undersized. They have poor teeth. Amenorrhea is common, especially in young women, who are poorly nourished.

The first seasonal signs of the effect of restricted diet appeared the end of March and beginning of April, four or five months after fresh food was lacking in the diet. A sudden increase in nervous instability was evident at this season. Psychoses developed in persons with a predisposition or under special strain, such as the period of lactation or unusual mental worry. In most cases improvement or recovery followed the establishment of proper diet.

Night Blindness.—"Night blindness" became common during April and May. A person suffering from "night blindness" is able to see during the day, but becomes blind at twilight. If he is away from home he has difficulty in finding his way and even in the house stumbles over furniture. He can see a bright light but little else. It occurs chiefly in men; one of the patients seen was a woman and the history of the disease in women could only be obtained in two instances. Children seem to be immune to night blindness as to snow blindness. The youngest patient seen was a boy of 15. It is most common in early adult life but was seen even in a man 70 years of age. Although "night blindness" occurs at the same season as snow blindness, in no case could any direct relation between the two be traced. It was not common exclusively among the very poor. It appeared in groups of people rather than in families. The degree of blindness varies in intensity and may be intermittent. It does not occur after dull days.

If night blindness is the result of dietary deficiency, the deficiency is very slight as the cure was effected within a few hours after the diet was corrected by giving vegetables, butter or eggs. It was interesting to find that the traditional lay method of treatment, which could not be traced to the advice of any physician or nurse, was eating raw bird livers. Potatoes roasted in ashes and eaten, skins and all, cod liver oil, and seal livers were said to have been used in a few cases with good results.

Xerophthalmia.—Only one case of xerophthalmia was seen. The patient was an old man whose food supplies had been very scant. He was seen in May, but the eye trouble had existed for some time and was too advanced for recovery to be expected.

Scurvy.—Three persons having scurvy came under observation, all early in May. One man had intramuscular hemorrhages in the arm. Two brothers 16 and 19 years of age had spongy bleeding gums. About the same time several patients came with ordinary ulcerative *stomatitis*, calling it scurvy. They recovered rapidly with the administration of potassium chlorate. This suggested giving potassium chlorate to the two brothers with spongy bleeding gums in the absence of better means. Both improved and the mouth of one healed completely with this treatment. A month later it was possible to give orange juice and the recovery of the other was complete.

Pellagra.—Only one case of pellagra was seen. The patient was a woman 28 years of age, who had not been well during the winter. Typical skin lesions appeared the first of May. Hygienic conditions were bad. The family was very poor and had had little food but bread and tea since February. A family of five had for the winter's supplies five barrels of flour, 18 gallons of molasses, seven or eight gallons of dried peas, 22 pounds of butter substitute, two quintals of salt fish, and a certain amount of rolled

oats left over from war food requirements. An epidemic of *erythema nodosum* occurred in the same village at the time pellagra developed and similar lesions were present on the skins of the pelagrin.

Beri-Beri.—Two patients with beri-beri came under observation. One, a young married woman, who had suffered from a severe form for nearly a month, was seen in May only three days before her death. The patient lived in such an isolated spot that it was impossible to get proper food to her in so short a time. The second was a middle-aged man who became ill early in June. Both belonged to very poor families where supplies were scant and in the case of the young woman the hygienic conditions were exceptionally bad.

Edema.—During May and June four patients had edema without polyneuritis or sensory disturbances. One man had had similar trouble several years before. His son also had edema of the legs. Both recovered promptly.

Edema complicating pregnancy either with or without albumiuria has not been included in this group. A slight amount of edema of the legs without albuminuria or eye symptoms was common in pregnant women, but they came to term without incident and bore healthy children. One woman had albuminuria and considerable general edema several weeks before and after delivery.

Rickets.—Even with the extent of malnutrition present in children there is very little rickets. Only two cases with marked signs were seen, both of tuberculous parents. Three other children had slight beading of the ribs, but there were no enlargements of the epiphyses, bow legs, changes in the skull or other bony deformities.

EVIDENCE OF INCREASED SUSCEPTIBILITY TO INFECTION

The importance of the protective rôle of certain substances in the diet against infection was shown by the great prevalence of tuberculosis among men not-

withstanding that they live chiefly in the open air. The women go out very little, but the men lead an active out of doors life. During May and June they work either out of doors or in open store houses, preparing their boats and fish nets. During the summer and autumn they fish, and in the winter every fine day they are in the open chopping wood. Wood and water must be hauled, so they spend considerable time driving their dog teams. Although they live in small quarters during the winter and the windows are rarely opened, considerable air must seep through the thin walls of the frame houses and the air is not foul as one enters the houses.

EPIDEMIC OF BERI-BERI AND XEROPHTHALMIA OF THE NEWFOUNDLAND SIDE OF THE STRAITS OF BELLE ISLE

In contrast with the conditions described on the Labrador side of the Straits of Belle Isle, where deficiency diseases occurred only as isolated cases, over a hundred cases of beri-beri developed in a group of communities on the Newfoundland shore across the Straits. Xerophthalmia was equally common. Frequently, when one member of the family had beri-beri, another had xerophthalmia. In one instance the patient was taken sick in December; the majority of cases, however, did not occur until March. In the region where beri-beri and xerophthalmia were prevalent the infant mortality was very high in contrast with a low infant mortality on the Labrador side of the Straits.

In the beri-beri patients edema and sensory disturbances were the chief symptoms. Swelling of the legs and ankles, coming on gradually, was the onset described in almost every instance. Pain, numbness burning or tingling was complained of by practically all. Sometimes the pain did not begin until the swelling began to disappear. Shortness of breath occurred in about one-fourth of the cases. Abdominal pain or numbness was present in about one-third of the patients. Eye trouble rarely oc-

curred with beri-beri. One patient said he had been blind all spring. Motor symptoms were described as "weakness" rather than paralysis. One patient reported that he had had beri-beri in the fall and had taken fresh whole milk and had been cured. Another had tried the same treatment from April to June and was no better.

DIETARY OF THE NEWFOUNDLAND COMMUNITIES

The difference in diet in the two regions was slight but distinctive. On the Newfoundland side of the Straits the people had no canned milk and no vegetables, i. e., neither potatoes nor rutabagas, as in the other district. There had been very little fishing after August, in contrast with the Labrador side where fishing continued through October, i. e., the supply of fresh fish was cut off nearly two months earlier. In the Newfoundland region people are considered much more prosperous. They have many cows, while in Labrador there are very few. A great part of the people eat butter rather than the butter substitute. All milk is scalded immediately, often for an hour or an hour and a half, to facilitate the separation of cream for butter-making. All cream is made into butter. The cows were not milked later than December and in some cases October. The hay had been cut late after the grass was dry, and the cows either perished before summer or were in such poor condition in the spring that even with green pasturage they did not recover until the middle of the summer. Cattle are fed hay only and are never given salt.

DISCUSSION

It is evident that from a nutritional point of view the people in both regions are in a "twilight zone" where very slight changes in the diet may cause deficiency diseases. Cereal grain is the chief source of protein. The usual sources of vitamins are lacking or inadequate. It is probable that a certain amount may be present in molasses. Tea may be an important source of vitamins.

Except in isolated cases, where the diet fell well below the average, the inhabitants on the Labrador side of the Straits were protected from deficiency diseases by the vitamins furnished by small quantities of canned milk and vegetables and the additional protein supplied by a longer season of fresh fish. Condensed and evaporated milk was a more satisfactory source of vitamins than butter made from the milk of cows fed on poor hay deficient in vitamins. Cow's milk cured beri-beri in the fall soon after green pasturage, but had lost its anti-neuritis substance in the spring after the cattle had had only dry grass.

Mothers on a diet sufficient to protect against deficiency diseases were able to nourish their sucklings, but wherever the diet dropped below the requirements for protecting against beri-beri the quality of mother's milk was such as to be insufficient to support life although the quantity was little reduced.

The coincidence of the occurrence of beri-beri and xerophthalmia indicates a modifying interrelationship of dietary elements. A deficiency in one type of vitamin probably increases the amount required of another. A poorer source of protein may also increase the amount required.

The growth of children is retarded very generally on a diet which produces deficiency diseases in adults only in isolated cases.

Night blindness is probably not a true deficiency disease. It did not occur in the region where other deficiency diseases, beri-beri and xerophthalmia, were common, but in places where these diseases were absent. The poor were not the only ones to suffer. The frequency of night blindness increased during April and early May and then decreased, although the dietary deficiencies continued to become more and more acute. Night blindness came at the season when nervous instability increased. Its occurrence in groups of persons rather than families also suggested a neurotic ele-

ment, but its exclusive presence in mer and its ready response to treatment spoke against this etiological possibility. Night blindness is most likely a prolonged negative after-image resulting from long continued exposure to the glare of snow. Similar blindness can be produced experimentally by looking at a white sheet in a bright light. Night blindness does not occur during the short, dark winter days nor in summer when the ground is free from snow, but in spring, when the increasing intensity of sunlight makes a dazzling glare upon the unbroken whiteness of the snow. Snow blindness results in many cases. Night blindness comes at the same season but lacks the intense photophobia of snow blindness. Women go out little and so escape. It is the young men engaged in out-of-door pursuits who suffer most. The blindness varies in intensity and may skip days. No doubt it is dependent on the brightness of the day and length of exposure out of doors. It does not occur after dull days. Patients respond readily to treatment, no doubt because they stay indoors when they are troubled sufficiently to submit to treatment. Suggestion may play a role in causing night blindness by attracting the attention to the after-image. This is equally true of any normal person. Restricted diet may also increase the probability of seeing after-images just as fatigue does. It is a temporary fatigue of the retina and not an inflammatory process as in the case of snow blindness.

The absence of rickets in a region where children are almost universally undernourished is interesting, especially where syphilis has not existed until very recently and is still rare. This suggests the importance of chronic infection, especially syphilis, as a predisposing pre-natal factor in the etiology of rickets.

The increased susceptibility to tuberculosis in the absence of protective substances in the food is very striking, and appears to be one of the most important etiological factors in that disease.

FINDING TUBERCULOSIS THROUGH SURVEY AND CLINICS

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Read before the N. J. Tuberculosis League at Lakewood, N. J., October 20, 1920.

FIRST of all let me say that we are proud of the fact that the city of Newark last year ranked first in the number of reported tuberculosis cases in proportion to the population. This was not due to the fact that the death rate was higher or that there were a greater number of cases in our city, but simply due to the hearty coöperation of physicians and other agencies with the Department of Health. The response to publicity and propaganda carried on by the health department in which repeated chest examinations were advocated, gave our clinics unusual opportunity to discover cases that would not have otherwise come under the supervision of the physician.

However, I still believe that there are a large number of cases that can be found in congested localities of our city by means of health surveys by visiting nurses and physicians, as well as through clinics.

For example:—Two years ago we conducted a survey on a small scale in a thickly populated section of the city and as a result it was found that in 42 tenement houses in one block there existed 23 active tuberculosis cases that were not known to the health authorities. If not for this survey, these cases would not have come under medical supervision. Of these, the majority were sent to various sanatoria and the families of the patients have from time to time been examined as routine follow-up work.

Last year a more elaborate ward survey was made; the nurses of the Department of Health having definite

streets assigned to them in the district; a thorough house to house canvass was conducted; every person found to have a cough of any description whether bronchial, asthmatic or otherwise was noted and questioned. Nurses subsequently followed up these suspicious cases by frequent visits. Those whose coughs soon disappeared were dropped from the list; but coughs that persisted and appeared chronic were advised to visit our clinics or requested to produce a certificate from a physician stating that they were free from tuberculosis. As a result of this procedure many new cases were discovered. The result as follows:

FOURTEENTH WARD

Population 40,000

Colds and Coughs.....	108
Bronchitis	26
Asthma	8
Suspected T. B.....	22

There is no question in our minds that if all cases of tuberculosis were recognized early and were brought under proper medical care, tuberculosis could be prevented and in the near future be eliminated entirely from the community. The only way that this can be accomplished is by repeated examination of the entire population by physicians well trained in the diagnosis of this disease.

We must train the people so that they will willingly present themselves for examination to physicians or clinics. This can be done by means of educational publicity and proper legislation. In the meantime we must seize every opportunity that is given us to examine portions of the population.

Our city has a recreation camp for

children at Avon-by-the-Sea, where the little ones of the city are sent for two weeks' vacation each summer. Formerly the children before leaving for camp were examined for acute diseases, scarlet fever, measles, whooping cough and diphtheria. This year I requested the city authorities to send all of the 1,400 who applied for admission to the camp to our clinics for examination of the chest. As a result many active and suspicious cases were discovered. None of the children, however, except those needing immediate sanatorium treatment were prevented from going to camp. Upon their return to the city, the suspicious and incipient cases were brought to the clinics for re-examination. Some suspicious cases were found to have cleared up from all symptoms, while in those cases where improvement had not taken place, steps were taken to put them under the supervision of the tuberculosis division and proper disposition made as to their treatment, care and future welfare.

It is curious that many of these cases had been attending school without their physical condition being known to their parents or the school authorities. In many instances parents were shocked and surprised when told of the condition of their child, telling the physician that the child had never coughed, disregarding and not noticing that the child was at that very moment coughing in the clinic room.

Total examined.....	1,650
Total suspected tuberculosis cases....	132
Negative	67
Positive	12
Remain to be re-examined.....	55

About 60 children have failed to return to re-examination.

As physician of the Juvenile Court of Essex County, I have had the unusual opportunity during the past two

years of examining more than 2,000 children ranging in age from 6 to 16 years. My findings were as follows:
 Referred to Glen Gardner Clinic.. 109
 Examined 43
 Accepted 22
 Rejected 11
 Waiting Admission..... 3

Taken care of by other institutions:
 City Home..... 4
 State Home 2
 Referred to Orange Board of Health 1
 West home and reported and are under observation 56
 Left the state..... 10

Recently, by the direction of the Health Officer, a physical examination of all the food handlers in our city was inaugurated and examination of their chests was carried out through our Division. To date approximately 1,400 employees of food handling establishments have been examined and 20 active cases of tuberculosis discovered. It is perhaps, needless to state that these persons are no longer permitted to handle food. The majority have been sent to sanatoria and other employment found for the remainder.

In conclusion I would say that 112 cases have been discovered that were it not for our system of surveys and clinics, these unfortunates would be going about in the city freely, spreading and communicating the disease to others; endangering themselves and the rest of the community. If we utilize every effort to discover all existing cases and help to educate the community to a higher standard of living, we shall at least be getting somewhere in this true National problem of eradicating disease that takes so great a toll of many young and useful citizens.

**Are you thinking about the Fiftieth Annual Meeting of the A. P. H. A.
 in New York City, November 14-18, 1921?**

REPORTING COMMUNICABLE DISEASES—A PHYSICIAN'S POINT OF VIEW

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Prevention of communicable disease is the fundamental reason for public health service. If administration fails here it can not be successful elsewhere. Efficiency of administration depends upon prompt knowledge of presence of disease. Since reporting must be done by physicians they are often blamed, but existing systems are at times inconvenient for them. The author suggests new procedures more convenient for physicians.

NO ARGUMENT is needed to convince the health officer or health worker that the report of communicable disease is the weakest link in the chain of communicable disease control, but the following quotation from the New York State Health Department's "Health News" (September, 1920) suggests the need for a continued, constructive program on the part of health authorities to make reporting more complete:

"A recent comparison of deaths from communicable diseases outside of New York City shows an average of 52% unreported to health authorities, the figures varying from 20% for diphtheria to as high as 84% for puerperal septicæmia. If these be the facts for fatal cases, what then must be the state of affairs in regard to the less serious ones which are much more likely to spread infection."

If this situation is admitted by the health authorities of New York State where health service is so well organized and will directed, where facilities for accurate diagnosis are readily available to physicians and where education regarding communicable diseases has been carried into the most remote communities of the state, what must it be in other states less fortunate than New York?

Although there is nothing really new in the suggestions which follow, it is perhaps worth while to give greater em-

phasis to certain phases of this problem, which in the development of local health service to meet new demands have been somewhat neglected. Briefly stated, the success of a campaign to improve the reporting of disease seems to depend on the following measures:

1. Making reporting easy for physicians and others.
2. Furnishing physicians with prompt and efficient laboratory service.
3. Making prompt investigation and taking intelligent action on reports when made.
4. Conducting continuously a thorough-going campaign for the education of those responsible for reporting.
5. Enforcing the law when practicable.
6. Checking all reports of death from communicable diseases against the register of reported cases.
7. Eliminating from the list of reportable diseases those over which the health authorities do not actually exercise supervision.

The first consideration, and perhaps the most important, is making reporting easy. As one studies reporting methods, he finds more often than not that, instead of trying to make reporting easy for physicians and others, health authorities have apparently tried to make it hard by requiring information from them which the health authorities ought to obtain for themselves, and by requiring a great deal of information which is not used at all, or if used, not properly used.

I can do no better than to quote on this point Dr. Hibbert W. Hill, whose name is familiar to all readers of the JOURNAL:

"A health department should look upon the report of the physician as merely a starting point. The health department should get reports of disease from physicians as promptly as possible, and should accept a phone message in preference to a written report, because the phone message is more prompt. The health department should not ask a physician to answer a thousand fool questions on the report about the epidemiology of the case. The physician can't and won't answer such questions; or if he does, he will answer them wrong. All you want from the physician is the patient's name and address so that you can go to the house. I believe that health departments should not insist on a diagnosis, but simply have the physician report that there is a case of infection at such or such address; that is quite sufficient, or ought to be for any well-equipped health department. It ought then to have its machinery so developed that almost instantly an inspector is on the spot. The inspector should find out for himself what really is the matter and take proper steps."*

As Dr. Hill points out thus tersely, one way to improve reporting is to organize the health department in such a way that the investigation shall be made by the health department and not by the physician.

This is really a vital issue. Physicians are mighty busy people as a rule and the demands upon their time in the care of their private patients must be met first. The average physician is called upon daily to give his time and energy to a hundred and one things which add little to the development of his private practice but much to his work. Among the most irritating of his duties is that of making out records and reports of one kind and another, not only those which the law requires of him but also those which health authorities and private health and welfare agencies request. If something can be done to reduce the amount of unnecessary record keeping and reporting that physicians have to do, it is certain that they will respond with greater enthusiasm in doing those things

which are really essential. If physicians are called upon to report only the name and address of a suspected case of communicable disease and are encouraged to use the telephone for this purpose, there will be an improvement in reporting—depend on it.

But the physician is not the only one responsible for the incompleteness of reporting. Commonly under the law, householders, institutional heads, teachers and others are required to report disease. They don't do it because they have not been taught to do so and because reporting has not been made easy for them. If reporting could be made easy as has been suggested, and a thorough campaign of education conducted among citizens generally, it is probable that the percentage of "missed" cases could be very considerably reduced. The majority of these cases are not seen by a physician, but some responsible persons see some that physicians do not see and someone's responsibility for reporting is ordinarily under the law as great as the physician's. It is possible that if citizens were informed of this fact and of the fact that health authorities welcome reports from them by telephone, anonymously or otherwise, health authorities might be put to the trouble of making some unnecessary investigations, but the gain in finding otherwise unreported cases would more than offset the loss of making a few unnecessary investigations.

The diagnostic laboratory is, of course, indispensable. It should be provided wherever possible and its use encouraged. To promote reporting, the laboratory report of a specimen sent in by a physician should be accepted as his report and no other report should be required of him. But the laboratory must be prepared to render service to the physician in return. The physician who sends in a diphtheria culture and then has to wait two or three

*From an address given by Dr. Hill before the students of a course in public health administration conducted jointly by the Bureau of Municipal Research, New York, and the Public Health Committee of the New York Academy of Medicine, May, 1919.

days for a report on it, in the meantime keeping himself, the patient and the family on the anxious seat, will often find it more convenient to send his specimens to a private laboratory which will serve him better. This is not at all uncommon practice among physicians in large cities—and there is a reason. Of course, the net result of this is that the health department loses, because in such cases it does not get the report of the disease or suspected disease until the private laboratory has made its report to the physician.

The handling in the health department of the abbreviated report of disease suggested is most important, since under this plan, the report would in most cases come over the telephone. This means that there should be an intelligent, competent clerk to receive and register reports by telephone or otherwise. One objection raised by health officers to telephone reporting is that it is often difficult to fix the responsibility of a physician for failure to report when there is no written record made and certified to by him. This is true, but the fault is perhaps more often that of the clerk receiving the telephone communication than that of the physician. The correction of this defect is, however, an administrative detail.

The next important procedure for improving reporting should be the responsibility of the health department alone—namely, the prompt investigation of the case by an intelligent, tactful investigator and prompt and efficient action by the health officer and his assistants. If an investigation is to be effective in determining control of the disease, it must be immediate, and if it is immediate, it will please the one who reported the case. Every physician has experienced the annoyance of reporting a case of communicable disease and then waiting for twenty-four hours or more for action by the health department. Prompt action will please physicians because it will relieve them of unpleasant duties and sometimes

unpleasant arguments with the patient and family. To get prompt action requires that as soon as a report is received, a competent inspector shall be available to whom the report may be referred for or immediate investigation. The inspector's office should be in the saddle or better still, in an automobile. When his investigation is made, such action as may be necessary can be taken on the spot and a complete report made to his superior.

We have already said something about the educational campaign, but it may be well to be more specific about this. The educational effort should, it is believed, be directed primarily at the householder and not at the physician. Perhaps the physician needs education too, but certainly he ought to know what his duty is by this time. Keep him informed, of course, but without too much preaching. If there is anything that makes the average physician tired it is the effort of non-physicians to teach him his business. So if any education of physicians is attempted, it should be in the form of direct communication from the health officer who, if he is a physician himself, will appreciate the physician's point of view. For the education of the public, and physicians too, the printed word is good, but the personal interview is better. One of the best mediums for the use of the printed word is the daily press, and the press can be used if the subject is one having news value. There is news value in a story that the local health department is about to start a drive against communicable disease; that a new system of reporting and investigation is going to be adopted which will cause as little inconvenience to citizens as possible, etc. The same ideas can be expressed in printed circulars and distributed to homes by school children or inspectors, nurses and others on their daily rounds. But the mere leaving of a circular in the home is not enough—and every home visit by the inspector or nurse should be

regarded and used as an educational opportunity. This kind of education is after all the most valuable.

Law enforcement to improve reporting is a neglected weapon. Most health officers have adopted the view that "more flies can be caught with molasses than with vinegar." We do not quarrel with this point of view, but there is something to be said in favor of taking advantage of the law in cases of deliberate and willful failure to report. The physician who neglects to report occasionally may, perhaps, be excused, but the one who reports only by a death certificate ought not to be always excused. The health officer should select his victim with care when he resorts to the law, and the case must be so worked up that there will be at least an even chance of getting a verdict for the health department. Threatening physicians does little except to make them wrathful, but no good physician will quarrel with a health officer, surely, for trying to enforce reasonably a law which he has sworn to enforce, especially if that law had been persistently violated. As regards law enforcement, it might be well for the health officer to secure the backing of his local medical association and fortify himself with a statement of its position with regard to law enforcement, to what extent and when the law should be invoked and how far the medical society is willing to go with him along the legal route.

The checking of all deaths for communicable diseases against the register of reported cases is a matter of administrative routine, and ought not to require emphasis. But there are scores of health departments in which this is never attempted. Action after a death report is too late in the day, of course, to help the particular case, but it may not be too late to prevent disease of others.

Certainly it isn't too late to check up the physician or other person who neglected to report at the proper time. For statistical purposes, too, full information is valuable and should be obtained in every case.

Finally, to improve reporting health authorities ought not to require reports of diseases about which they intend to do nothing. If the health department doesn't intend to investigate a case of lobar pneumonia or puerperal septicæmia for example, and doesn't intend to use its information about these diseases to establish control of them, why ask physicians to waste time in reporting them? The health laws of many states and cities include in their lists of reportable disease many which are only occasionally reported and to which the health authorities pay no attention even when reported. The physician or other person who learns that no use is made of his report of one disease is less likely to report others, and the statistics of diseases for which reporting is required by law but not required in fact are worthless because such reports as are received represent only a very small percentage of existing cases.

A public health service built on an inefficient system of communicable disease control will be inefficient in every department of its service. It seems to the writer that it is time to get down to brass tacks in the development of public health administration and put more emphasis and more effort on the attack against communicable disease. As in football, quoting a famous and successful football coach, "The best defense is a strong offense." The offensive must start with improved reporting of disease—and though 100% reporting may be too much to expect, certainly 50% reporting is little to be proud of.

Are you planning to take a friend when you go to the Fiftieth Annual Meeting of the A. P. H. A. in New York City, November 14-18, 1921, and nominate him for membership?

EPIDEMIOLOGICAL STUDY OF AN ENDEMIC FOCUS OF LEPROSY

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Sept. 16, 1920.

In this focus the authors found the majority of cases to be among native-born children of German-born parents, males preponderating, and largely infected in the locality. It is uncertain whether the infected area is increasing. Cases are grouped in distinct foci and insect transmission is inadequate to explain the grouping while contact transfer is not wholly satisfactory.

HAVING learned of the prevalence of leprosy in the area under consideration to a degree unusual in the United States, it appeared that all available data pertaining thereto should be secured and made a matter of record. This study was therefore undertaken in an unofficial capacity, a circumstance which possibly has not aided in the collection of information. An epidemiological investigation of a chronic disease of long duration such as leprosy is a much more difficult matter than the collection of similar data for an acute infection for reasons that are obvious. The records of the health department are very meagre, and only relate to the reports of cases within recent years. So far as possible our information was secured from the patient himself, and where the patient himself was not available, for one reason or another, we are largely indebted to the practicing physicians of the city for our information. To them are due our hearty thanks.

Endemic Area.—The endemic area is a moderate sized, subtropical city located at the eastern end of a long, narrow island in the Gulf of Mexico, two or more miles distant from the mainland. Industrially the city is a seaport of considerable importance, while manufacturing is of relatively minor importance. Demographically the city differs from most southern cities in the rather small proportion of negroes and for the large proportion of foreign born whites, or native whites of foreign born parentage composing the population.

Known Incidence of Leprosy.—The site of the city has been settled about one hundred years, but the information we have been able to collect regarding the incidence of leprosy does not cover a period of over thirty years. This not to be taken as a suggestion that leprosy was unknown prior to that time, but is due to the absence of any official data regarding its early occurrence.

The earliest case of leprosy of which

we have been able to learn was recognized in 1886, and shortly thereafter permanently left the area. It was apparently of local origin and is not included in our series. In 1889 Dock¹ reported two cases of local origin, which are included in our series. In a personal communication Dock states that he made at the time a "pretty thorough survey of the Mexican and Chinese quarters, but did not find any other cases." Only one Chinese case of leprosy has ever been known here, and of our series only two are Mexican. In addition to the 45 cases of our series, we have learned of 25 additional cases of leprosy that have existed in this focus, but owing to the lapse of years and the absence of recorded data, have been unable to secure many particulars and have accordingly omitted these cases.

Our series of 45 cases has occurred during the past thirty years. We have divided these cases into three groups as follows:

Class A: Living cases at present residing in the area..... 26
 Class B: Cases presumably alive, but who have removed from the area. 6
 Class C: Cases known to be dead.. 13

We were able to secure the most detailed and complete information concerning the cases of Class A. From an analysis of the data we have collected we present the following tables of summarization:

TABLE I

Local or Imported Origin of the Cases

	Class A	Class B	Class C	Total
Imported	3	2	0	5
Local cases	23	1	12	36
Unknown origin	0	3	1	4

The imported cases will be omitted from many of the subsequent tables. Where such is the case, the table heading will indicate this by (40).

The cases have the following incidence:

TABLE II.

Racial incidence of leprosy cases (40)

	Class A	Class B	Class C	Total
Whites of:				
a. Native born parentage	6 (26%)	1	2	9
b. Foreign born or mixed parentage	11 (48%)	0	5	16
c. Foreign born	1 (4%)	0	3	4
Negro	5 (22%)	0	2	7
Other races	0	0	0	0
Unknown	0	3	1	4

TABLE III.

Sex incidence of leprosy cases (40)

	Class A	Class B	Class C	Total
Male	13	2	10	25
Female	10	2	3	15

Their age at the onset of the disease was as follows:

TABLE IV.

Age at onset of leprosy (40)

	Class A	Class B	Class C	Total
From 1 to 10 years	1	1	0	2
" 11 " 20 "	8	0	2	10
" 21 " 30 "	2	0	0	2
" 31 " 40 "	5	0	3	8
" 41 " 50 "	2	1	0	3
" 51 " 60 "	3	0	2	5
Over 61 years	0	0	2	2
Age unknown	2	2	4	8

These cases had resided within this area for the following named periods before the onsets of their illnesses:

TABLE V.

Length of residence in focus before onset (40)

	Class A	Class B	Class C	Total
From 1 to 5 years	2	0	1	3
" 6 " 10 "	1	0	0	1
" 11 " 15 "	8	0	2	10
" 16 " 20 "	5	1	4	10
" 21 " 30 "	2	0	0	2
" 31 " 40 "	2	0	0	2
" 41 " 50 "	0	0	1	1
" 51 and more	1	0	1	2
Length of residence not known	2	3	4	9

From Table IV it would appear that especial susceptibility is not observed at any particular age period. In order to ascertain if length of residence within this area was an influencing factor, rather than age in determining the onset, we divided our cases into two groups, according to their birth place. The first group comprises those born within this area and the second group those born elsewhere. The individuals comprised within each of these groups were then separately classified according to length of residence and age at onset. This data is presented in Table VI. As would be expected, there is, among those born locally, a close correlation between the length of residence and the date of onset, the maximum occurring during the second decade of life and residence. On the other hand, among those born elsewhere this correlation is not found. It is to be noted, however, that the maximum number of onsets in this group have occurred during the second decade of residence, as among those locally born, while the ages of onset are among the later periods of life. It therefore appears proper to conclude that length of residence within this area, rather than age, is a determining factor in influencing the onset.

TABLE VI.

Relation of age and residence to onset (40)

		Cases born in area		Cases born elsewhere	
		Length of residence	Age at onset	Length of residence	Age at onset
From	1 to 10 years	2	1	2	1
"	11 " 20 "	9	9	11	1
"	21 " 30 "	1	2	1	0
"	31 " 40 "	2	2	0	6
"	51 " 50 "	0	0	1	3
"	51 and over	1	1	1	6
Unknown		3	3	6	5

Note—Apparent discrepancies in first

and second columns are due to patients who temporarily moved away.

These patients were, or are engaged at the present, in the following occupations:

TABLE VII.

Occupations of leprous patients (45)

	Class A	Class B	Class C	Total
Real estate agent	0	0	1	1
School child	2	0	0	2
Locomotive engineer	1	0	0	1
Laborer	10	0	4	14
Retired tailor	1	0	0	1
Delivery boy	1	0	0	1
Laundry worker	0	0	1	1
House worker	7	1	1	9
Seamstress	1	0	0	1
Sailor	0	1	0	1
Cashier	1	0	0	1
At home	1	0	0	1
Fireman	1	0	0	1
Stenographer	0	1	0	1
Harness maker	0	0	1	1
Hospital orderly	0	1	0	1
Not known	0	2	5	7

Multiple or single cases have occurred as follows:

TABLE VIII.

Number of cases in invaded households (45)

	Class A	Class B	Class C	Total
Households with 1 case	19	6	7	32
Households with 2 cases	2	0	3	5
Households with 3 cases	1	0	0	1
Family with 4 cases (incl. above)	1	0	0	1

Clinically these cases may be grouped as follows:

TABLE IX.

Frequency of different clinical types (45)

	Class A	Class B	Class C	Total
Tuberculous	11	2	4	17
Anesthetic	5	1	0	6
Mixed	10	2	9	21
Not known	0	1	0	1
Ulcerative (incl. in mixed)	1	0	0	1

These cases have been of the following duration:

TABLE X.

Duration of illness in leprosy (45)

	Class A	Class B	Class C	Total
Less than 1 year	2	0	0	2
From 1 to 2 years	2	0	1	3
3 "	5	0	0	5
4 "	3	0	2	5
5 "	3	0	1	4
6 "	1	0	0	1
7 "	3	0	1	4
8 "	2	0	1	3
9 "	0	2	0	2
10 "	2	0	0	2
15 "	2	0	0	2
17 "	0	0	1	1
24 "	0	0	1	1
Not known	1	4	5	10

In considering the facts presented by this series of tables, the following stand out:

(1) The majority of known lepers within this city have acquired infection locally.

(2) A comparison of the racial incidence of cases with the current distribution of the population is at the time of this writing impossible, since the results of the 1920 census are not yet available. An accurate estimate for 1920 furthermore cannot be made. Accordingly we shall have to employ the 1910 population composition.

TABLE XI.

Racial incidence of leprosy compared with racial composition of the population.

	Living lepers, 1920	Proportion in population, 1910, by percentage
White		
Native born parentage	26%	34.2%
Native born of foreign or mixed parentage	48%	27.3%
Foreign born	4%	16.7%
Negro	22%	21.7%

Thus it is apparent that cases have occurred among whites and negroes only in proportion to their distribution in the population of this area. On the other hand, it is to be noted that the cases are more numerous among those whites of foreign-born parentage, than among na-

tive-born whites. This incidence among those of German parentage seems to be proportionately higher than among those of other descent. Thus in 1910 the native-born whites of foreign-born German parents were 2,365 of 6% of the total population, while 35% of the present cases are among their number. The significance of this not clear. It may indicate greater susceptibility among those of German ancestry, or the strain of leprosy prevalent here may be of Teutonic origin.

(3) We have 25 male and 15 female lepers.

(4) Only one of our cases developed the disease before the age of ten, yet the second decade of life contains the onsets of a larger number of cases than any subsequent age period, none of which is exempt.

(5) For the most part, infection only appears to develop after a protracted residence in this area. Only two cases are known to have developed the disease under five years' residence. The most of the cases have appeared following a period of residence of from eleven to twenty years. It appears that the length of residence is a more important factor in determining the age of onset than the age itself.

(6) Among males the greatest incidence is among laborers. The occupational incidence among females is not suggestive. In general the occupational incidence coincides with the social status of the cases, that is, they are most prevalent among those in the humbler walks of life.

(7) The disease in this focus tends to run a chronic course, characteristic of its occurrence elsewhere. The tuberculous type is more common than the anesthetic, while the mixed is more frequent than either of the others. Only one of the present cases has any ulcerations.

Annual Incidence of Leprosy.—The annual incidence of leprosy within re-

cent years is shown in the following table:

TABLE XII.

Year	Population, mid-year est.	Onset	Rate per 100,000	Cases reported	Death rate per 100,000
1911	37,851	0	0	1	0
1912	38,597	2	5.2	2	2.6
1913	39,343	2	5.1	2	2.5
1914	40,089	1	2.5	0	2.5
1915	40,835	1	2.4	0	0
1916	41,581	4	9.6	0	4.8
1917	42,327	4	9.4	0	0
1918	43,073	2	4.7	8	0
1919	43,819	1	2.3	3	4.5
1920 (5/1)	44,565	1	2.2	1	2.2

While our information concerning the incidence of leprosy prior to 1910 is meagre, so that in all probability the majority of cases are unrecorded, yet it is uncertain that the incidence of the disease has increased materially during the last decade. To give an idea of the recent comparative incidence of leprosy in this and other foci of the disease, a small table is appended:

TABLE XIII.

Local focus (1918)	No. cases known living in focus	Cases reported during year
(own data)	26	8
*State of Texas (1918)	18	0
*New York City (1918)	23	2
*San Francisco (1918)	19	7
*State of Minn. (1918)	10	2
*United States (1918) (continental)	209	63

*Data from Rep. Surg. Gen., U. S. P. H. S., 1919.

From our study we feel confident that there are still a number of unrecognized cases of leprosy living in this focus, yet the foregoing comparison calls attention to the inadequacy of our knowledge of the incidence of the disease in the United States as a whole, particularly when we note the number reported from the entire state of Texas compared with the number in this focus during the same

year. Even considering the notorious inadequacy of our knowledge of the prevalence of leprosy in the United States, it seems possible that the actual incidence of the disease in this focus is greater than in most, if not all other of those areas in the United States where the disease is known to be endemic.

Geographical Distribution Over the Endemic Area.—The city under consideration is divided into thirteen precincts. The density of population in each precinct and the incidence of leprosy therein are shown in the accompanying table:

TABLE XIV.

Precinct	Population 1910	Density per acre	Lepers population, 1920	Lepers orig- inating in each area	Cases of German descent
1	2,943	22	1	6	3
2	2,810	31	1	2	0
3	2,425	23	1	1	0
4	2,505	24	3	1	2
5	3,228	31	0	1	0
6	4,553	6	8	6	4
7	3,960	2	5	7	1
7½	2,615	12	1	2	0
8	2,609	13	0	0	0
9	2,468	12	0	0	0
10	2,515	17	4	6	4
11	2,352	16	0	0	0
12	1,998	19	2	3	0

It is to be noted that in three precincts we have no record of either past or present cases of leprosy originating therein. It is also to be noted that the distribution of these cases is not proportional to the density of population, and that we can further distinguish several well-defined foci of infection, where a radius of two or three blocks will inscribe all the cases in that area. Thus we can note one such focus in the first and second precincts, another in the sixth, one which lies in both the sixth and seventh precincts, one in the tenth precinct and another in the twelfth precinct. It is also to be noted that the focus in the first and second precincts has very nearly become ex-

tinct, the majority of the cases having either died or moved away, while those still remaining are of several years duration. One focus which lies in both the sixth and seventh precincts appears quiescent, for no new cases have been reported within this area for several years. The westerly focus in the sixth precinct, the focus in the tenth and the focus in the twelfth precincts appear to be active at present, and have contributed the cases recognized within the last two years.

Referring to the high incidence of the disease among those of German birth or descent and noting the place of their residence, it is found that most of these German cases are concentrated in the first, sixth and tenth precincts. This suggests that there may have existed a degree of social contact among these cases, despite some negative histories of contact given to us in reply to interrogations.

Data Relating to Route of Infection.

—We have already stated that of the households in which at present are living cases, 19 households have one case; two households, two cases, and one household, three cases. In addition, surveying all of the past or present cases known to us, we were able to secure the following data relative to known association with a case of leprosy prior to the onset.

TABLE XV.

History of contact with lepers prior to onset (45)

Known association with a leper at:	Class A	Class B	Class C	Total
Home	7	0	1	8
Elsewhere	6	1	3	10
Contact not known	10	1	1	12
No data secured	3	4	8	15

In thirty cases we were able to elicit definite information upon this point. Eighteen of these or 60% gave a history of such association prior to the development of their own illness.

Contact with pre-existing cases of lep-

rosy took place under the following circumstances:

Case 5 conducted a rooming and boarding house in which case 30 lived for three months, one year prior to the onset of case 5.

Case 8 went on frequent fishing trips with case 25.

Case 9 slept with case 48 for a period of two months, ten years prior to her onset.

Case 10 associated with a leprous brother-in-law and niece in Mexico.

Case 11 was in contact with her mother, case 43, whose illness was diagnosed as pellagra.

Case 12, as a boy, played with cases 37 and 46.

Case 13, contact with mother, case 14.

Case 14, contact with husband.

Case 15, contact with mother, case 11. In this family there are three generations of leprosy cases.

Case 17 and 18 are two brothers whose onsets were practically simultaneous. Contact with mother, case 19.

Case 21. A grand-daughter of case 19 and niece of cases 17 and 18. This is a second instance of three generations of leprosy patients in one family.

Case 25 was, as a child, associated with cases 17 and 18.

Case 40 is a brother of case 48.

Case 41 was in contact with his mother, who probably contracted infection while living in Mexico.

Case 46, slept with his older brother, case 37.

It might be possible that the tuberculous and anesthetic types of leprosy are due to separate strains of the bacillus, each having a different selective localization in the body. If this is the case, it might also be possible that the histories of contact would show that the strain breeds true, i. e., tuberculous cases of leprosy give rise to tuberculous cases, etc., providing the known leprous asso-

ciates were the actual source from whom infection was secured.

Data bearing upon this point are presented in the following table:

command our attention in this connection, namely, *Musca domestica*, *Stegomyia fasciata* and *Cimex lectularius*.

That leprosy bacilli can possibly be

TABLE XVI

Type of case with whom living cases were in contact (26)

Living cases giving a history of contact		Living cases not giving a history of contact	
Clinical type	Contact known with:		
1. Tuberculous 4 cases	4 tuberculous lepers		7 cases
2. Anesthetic 2 cases	1 mixed leper 1 anesthetic leper		3 cases
3. Mixed 7 cases	3 tuberculous lepers 1 anesthetic leper 1 mixed leper 1 type unknown 1 to both simple types.		3 cases

From this data it would appear that if these cases do owe their origin to contact transmission from cases with whom they are known to have been in contact, the clinical types of leprosy are possibly due to the selective preference of different strains of leprosy for either the sub-cutaneous or nervous tissues, and which tend to maintain this behavior on transfer.

In view of the inadequacy of our data to explain entirely the grouping of the cases into several small foci on the basis of contact transfer, it may be worth while to consider other possible means of transfer. The only other routes of transmission with which we are familiar that would produce a similar epidemiological picture are insects. From the short radius of these foci it would appear (1) that the assumed insect has a very narrow radius of activity; and (2) from the relatively few cases that develop in a focus, the insect is not a very efficient means for the conveyance of the organisms. So far as the local insect fauna is concerned, there are three species that

conveyed by insects, especially those which suck blood, would appear possible from the following facts:

(1) The leprosy bacilli are present in the sub-cutaneous tissues of patients at a depth where they could be reached by the proboscis of a blood-sucking insect, or are present in the discharge from ulcerations.

(2) The localization of our cases is suggestive of the activity of known species having a narrow radius of activity. The three species mentioned tend to have such a narrow radius.

Against this view may be advanced the following facts:

(1) The known infections transmitted through the activity of these insects, tend to spread more rapidly with a higher incidence than leprosy, even making allowance for the fact that the former are acute infections while leprosy is chronic.

(2) The known observations upon the presence of leprosy bacilli in insects have given very few positive results. Currie² has reviewed the data available upon this point up to 1910 and submitted

some negative data secured by himself regarding mosquitoes. Brinckerhoff³, Leboeuf⁵, and Noc⁶ report largely negative observation on mosquitoes, while Thomson⁴, Leboeuf⁵, and Skelton and Parham⁷, report negative results with bed bugs. McCoy and Clegg⁸ report positive findings from two head lice captured on a leper. Leboeuf⁹ found 19 of 23 house flies fed upon ulcers to be positive, while Honei and Parker¹⁰ found lepra bacilli in both the house fly and the stable fly. It is, therefore, apparent that the idea of insect transmission has little evidence to support it, with the exception of that concerning the house fly. We have previously noted that only one of our present cases is ulcerative. We are, therefore, forced to conclude that the idea of insect transmission is inadequate to explain the peculiar grouping of our cases.

Rat Leprosy.—In this connection we made some effort to detect rat leprosy in the course of the examination of some 23,000 rats for plague. Only seven leprous rats were identified, as proven by the detection of acid fast bacilli in smears. These were all Norways. In the course of the search 14,000 Norway rats were examined. Special effort to secure additional leprous rats from these areas was made without success.

Consumption of Fish.—Some years ago considerable attention was drawn to the consumption of fish in relation to the incidence of leprosy. We secured the following data regarding the consumption of fish from our series of cases:

TABLE XVII.

Consumption of Fish by Leprous Patients (45)

Fish frequently eaten	11
Fish occasionally eaten	1
Fish rarely eaten	9
Fish never eaten	2
No data	22

This does not appear to support the view that a fish diet bears any relationship to the development of the disease.

CONCLUSIONS

From the foregoing analysis of the

data we have collected we draw the following conclusions:

(1) The majority of the known cases of leprosy in this focus have acquired infection locally.

(2) There is apparently a greater incidence of the disease among those native-born of foreign-born German parents than among any other groups in the population.

(3) There is a preponderance of cases among males.

(4) More cases have developed during the second decade of life than in any other age period, though no age group appears to be immune.

(5) The length of residence within the area appears to be a more important factor than age in determining the onset. The majority of cases among those born elsewhere develop the disease during the second decade of residence.

(6) It is uncertain whether the incidence of the disease is undergoing any increase in the area.

(7) In proportion to the population of the area, there is probably a higher incidence of leprosy in this area than elsewhere in the continental United States.

(8) The cases within the area are grouped into several distinct foci.

(9) A major proportion give a history of contact or association with a case of leprosy prior to the onset of their own infection. Known contact transfer will not explain the origin of all the cases or of the peculiar grouping into foci of a narrow radius.

(10) The hypothesis of insect transmission is inadequate to explain the grouping of the cases. More likely contact with unrecognized cases or unrecognized contact with known lepers is responsible for the 40% of cases from whom a contact history was unobtainable.

In concluding we should call attention to the fact that absolutely no official con-

trol or supervision in any form, has ever been exercised over the cases of leprosy within this area.

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SEASONAL VARIATION IN MULTIPLICATION RATE OF MICRO-ORGANISMS WITHIN THE BODY

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That the curve of typhoid incidence, the *B. coli* content of a polluted stream and the *B. coli* output of the observer follow the same seasonal variations is shown. There is apparently a variation in the biological equilibrium of the body and a changed rate of multiplication of organisms. There is opportunity here for interesting bacteriological investigation.

THE phenomenon of seasonal variation of disease has so long been familiar as to become axiomatic without need for further explanation. That some relation to the humors of the body existed, which were disturbed at different seasons, was sufficient theory to satisfy the common sense. Sanitary science has been fully engaged in tracing out the sources and modes of infection without investigating the susceptibility of the body to the infection. The startling suggestion by Dr. Charles E. North¹ in 1912 that the altered concentration of blood supply, following thermal changes, might give rise to differences in susceptibility of the tissues and probability of attack,

created much interest and opposition. The *à priori* hypothesis without experimental evidence merely offered a physiological interpretation of statistical observations.

While at Fishermans Island, Va., during the year 1914-15, the author had occasion experimentally to infect tanks with his own feces. Great difficulty was observed during the winter in obtaining sufficient numbers of *B. coli* to infect the tanks. The condition persisted for several months until the hot weather approached, when it became a simple matter to get large numbers of *B. coli*. This observation was sufficiently well established by its consistence to suggest that the number of *B. coli* in the intestine also

varied with the season, being more prevalent during the warm weather.

Upon suggesting this experimental observation as confirmation of the hypothesis that the condition of the body varied seasonally to Prof. E. B. Phelps, he became quite interested, because of having found a similar seasonal *B. coli* distribution curve in the waters of the St. Clair, the Detroit, Niagara and St. Lawrence rivers.² Since all of these rivers have a rapid uniform flow with a steady population, the cause of the distribution apparently arose from an actual variation in the number of *B. coli* which were introduced.

In order to obtain more accurate experimental data the author began in the spring of 1916 to determine the number of *B. coli* actually discharged by himself as an individual. These tests were conducted through the summer months until a change of detail made it impossible to continue the observations. Sufficient data had, however, been obtained in seven months (Table I) to prove that there was a distinct variation in the bacterial content of the intestine. When these results were compared with those obtained in the river studies, a striking similarity—both in time and degree—was evident. A paper entitled "The seasonal distribution of *B. coli* in a polluted stream" was presented by Prof. Phelps and the author at the meeting of the American Public Health Association in the Fall of 1916. This paper has never been published be-

cause the Hygienic Laboratory decided to carry out further researches to confirm the results. With the outbreak of the war, however, the work was abandoned and it does not appear likely that it will be continued. Since the experimental data seem worthy of notice, and the river data have already been published,² the results are presented here.

When the seasonal variation of the intestinal content of *B. coli* is plotted on the same relative scale as the seasonal distribution of *B. coli* in these rivers (Chart I), a striking similarity is at once

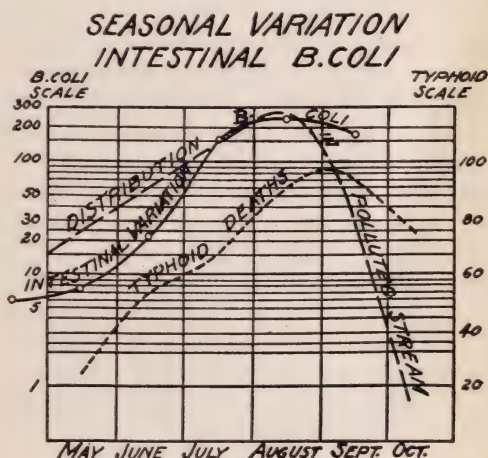


CHART I.

Showing relation between Seasonal Variation of intestinal *B. coli*, 1916. Seasonal Distribution of *B. coli* in St. Clair, Detroit, Niagara and St. Lawrence Rivers, 1913, and Seasonal Curve of Typhoid Deaths, Buffalo, 1906-14.

TABLE I.
Seasonal Variation of Intestinal *B. Coli*.

1916 Month	Number of Samples	Grams per Day	<i>B. Coli</i> —Millions Per Gram			Relative No. <i>B. Coli</i>
			Maximum	Minimum	Mean*	
March	4	83	4.73	.479	1.57	12.0
April	4	125	2.65	.284	.813	6.24
May	7	97	1.02	.254	.944	7.24
June	6	89	7.95	.948	2.72	20.8
July	10	110	96.8	1.67	19.6	150.
August	15	108	265.	1.07	28.2	216.
September	8	99	900.	1.12	21.8	167.

*Geometrical Mean.

observed, as also to the curve of typhoid deaths in Buffalo for the years 1906-1914. The remarkable degree to which these three independent curves are parallel cannot be attributed to mere chance. It must be admitted that the seasonal distribution of *B. coli* in the rivers is related to the similar seasonal variation of *B. coli* within the intestine. Moreover, the increase in typhoid fever at the same season must be assumed to have a distinct relation to the same conditions. It is not necessary to assume that the one is the cause of the other, for it is an equally probable hypothesis that they are both due to the same cause.

Inasmuch as the conditions of existence of both *B. coli* and *B. typhosus* are known to be closely allied, it seems very probable that the same condition of the digestive organs which lead to a multiplication of the former would also favor the multiplication of the latter. The experimental evidence, therefore, indicates in a striking manner the fact that there is a seasonal change in the physiological equilibrium of the body. Whether the real cause is given by North's hypothesis, or is due to some other condition in the body, is not determined.



Free Milk for Students.—A "more milk" campaign designed to reduce the number of under-nourished children in St. Louis schools has been instituted by the American Red Cross chapter there, following a study of conditions among pupils. A number of milk stations have been established in the various schools at the request of school officials who discovered a high rate of malnutrition among their students. The milk is served in half-pint bottles to the children at a cost of four cents a bottle. If the children are unable to afford this small sum they are given tickets which entitle them to a bottle of milk free of charge. More than 1,200 bottles are being distributed daily. Crackers are given with each bottle, rendering the nutritive value of this supplemental meal higher than it would be otherwise.—(*J. A. T.*)

Generalizing upon this experimental data and the inference which may be logically drawn from it, we may state that it furnishes experimental confirmation of the following principles:

1. There is a seasonal variation in the rate of multiplication of micro-organisms within the body.

2. This variation appears to be due to a seasonal variation in the biological equilibrium of the body.

3. The rate of multiplication of organisms within the body depends upon a susceptibility of the tissues, due to the physiological condition of the organs of the body.

Turning from a study of the sources and modes of infection to an inquiry into the susceptibility of the tissues of the body to infection, a promising field of bacteriological investigation is offered.

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Dentists Want Representation in a Federal Health Department.—"If a Cabinet position devoted to health is created, the dentists of America must see to it that dentistry is properly recognized. If the Secretary of Health is a physician, then the first assistant secretary must be a dentist. Dentistry should get busy and see that proper representation is given, otherwise we will be in the same position as the pharmacists—that is, on the anxious seat. The political power of the dental profession is very great and if dentistry is overlooked it will be due to lassitude. Hard luck pursues those who do not think ahead."—Editorial by R. P. McGee, M. D., D. D. S., *Oral Hygiene*, April, 1921. (*J. A. T.*)

OFFICE SYSTEM IN PUBLIC HEALTH ADMINISTRATION

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Failure to locate papers in an office is a symptom of careless thinking, states this writer. If, as a health officer, you have not established efficient office methods and trained the personnel to see that these methods "carry on," perhaps such failure is due to the kind of thinking you have been doing.

"GENIUS," said Robert Louis Stevenson, "is the capacity for taking infinite pains." The good executive must be akin to the genius; for infinite pains is the price of adequate office system. In the office of a public health executive such system is especially vital. Time is saved by finding papers and facts at once, by having a force trained and willing to take responsibility, by stopping leaks, by avoiding wasteful friction and uncertainty, and by reducing the number of complaints. More than this, system makes possible quick decision and rapid action on the part of the whole force, and reduces to a minimum the danger of letting matters slip by unacted on. This improves morale in the office and wins the good will of the public. If in business such good will would mean money or credit, in public health administration it is a factor making for success.

Here is a question to which every health officer should give attention. Whether his office force number two or 200, his office methods will not build themselves. He should be a reader of business publications and their advertising sections, as they will be rich in ideas that he can apply to his own problems. He should be aware of the improvements which are constantly being made in office equipment and supplies. He will then realize that, to secure adequate office sys-

tem, there is needed, not an expert brought in from outside, but familiarity on his part with the systems in general use, applied common sense, and "infinite pains" to see that things started right do not go wrong.

In the hope of being of practical assistance to the health officer, this article reviews a few of the methods which have been found useful by actual experience in a particular office concerned in public health work. No originality is claimed for them; but in office management it is not originality, but effectiveness and applicability which count.

TWO PRINCIPLES OF GOOD OFFICE MANAGEMENT

Two principles are fundamental to the system in this office:

1. The keeping of filing and index systems which will permit the executive *and each person under him* to find what they need without delay, and which will prevent matters from being lost to view and, therefore, either not acted on at the necessary time or unduly delayed. Papers should keep step while marching through an office. Failure to find papers *and to find them when needed* is a symptom of careless thinking on the part of some one in the office—frequently the executive.

2. The training of subordinates to assume all possible responsibility. The health officer can have good office management without sinking himself in it.

Considerate individual treatment and encouragement of the clerical force will give them an enthusiastic interest in what the executive is trying to accomplish. They will soon be capable of carrying on adequate office systems with a minimum of supervision. The great necessity is for the executive to be willing to delegate to them all that they can manage—even if the work is not performed quite so well as it would have been by himself—and to let them have the credit for what they do.

The essentials, then, are to establish efficient office methods and to train the personnel to take a keen interest in seeing that these methods "carry on." It is always to be remembered that, unless systems are as simple as possible, they will not be worth their weight.

VISUALIZING YOUR DUTIES

In only the smallest office can the executive keep in his mind all of the important matters which are in course of being acted on. He needs to have accessible an up-to-the-minute record of his duties. Moreover, there are a number of matters on which he hopes to act at some future date, but which he wants to keep continually in mind. If he puts these points on cards, he must go over them every day or two to refresh his memory, and as such matters generally have no logical arrangement, alphabetical or otherwise, he will have to finger over a number of cards every time he wishes to refer to a particular matter.

Why not a visible index record? In such indices the cards lie flat, one on top of another, usually in drawers, with a strip at the top or bottom of each card exposed or covered by transparent celluloid. On this exposed portion will go only a brief description of the activity—the "catch-words" which are used in the office in referring to it. When the edge of one card is lifted up, the whole surface of the succeeding card is brought into view, and additional entries can be made on it without difficulty. The cards

can either be arranged in different drawers or sections of the file by subject, or, if it is desirable to have the exact status of the matter evident at a glance, the cards can be arranged under headings such as "Not Acted on," "Pending," "Referred to Laboratory," "Held for Next Fiscal Year," or whatever the precise need of the office is. The cards are then transferred from section to section in accordance with the status of the matter. If, on the other hand, it is desirable to keep the subject arrangement and yet have the status appear at a glance, colored signals (tabs) can be used, a different color for each step taken. The tab can be pinned to the card, so that only a narrow strip of it will show, or, in the case of visible files with celluloid "inserts," the tab needs only to be slipped down between the celluloid and the card. Transparent signals can be used which will make it possible to see the legend on the card through the signal.

FILING CLERK KEEPS VISIBLE INDEX

In the office under discussion, a visible index record of important activities (primarily contemplated work) is kept by the filing clerk, who makes entries (1) from the correspondence when it first comes to the office, (2) from the correspondence as it goes to file, with replies attached, and (3) from "references" to other offices, as they come to the filing clerk for mailing. The papers are initialed to indicate that the entry has been made.

No one in the office—not even the executive himself or his immediate assistant—has a more definite idea of the status of matters passing through the office than has this clerk. The significant advantage of having filing clerks possess such information is readily appreciated. They will know the meaning of papers they are filing; their work will cease to be drudgery; and given any satisfactory filing system at all, they will know how to get papers out on short notice, even where the description given them is rather incomplete. They are

also receiving excellent training in office precedents and will later be able to assume higher class work. There is a signal advantage for the other clerks too. The file is accessible to the whole office, and dispels all mystery about what is going on. It may appeal to an executive's vanity to think that he alone knows what his office is doing; but if he has that attitude, he need not expect his clerks to be of real, constructive assistance to him. Where the head alone knows the business of the office, the clerks are automations, and when he is away, the office stands still. Decidedly, the force should be familiar with and interested in the activities of the office. They may not be able to say what policy should be taken on any matter; but they should know what policy has been taken.

While a given activity is in progress, the card can be placed in a special section of the visible index, or it can be filed in a drawer. In either case the executive has a convenient record of all important work in progress.

When a particular matter is settled or piece of work finished, the card can go into a card file as a part of a permanent record of activities. As years go on, such a record, especially if care is taken to indicate on the card at the proper time where a report of that activity can be found (in a publication, in the annual report, etc.), will be of constant value. Any executive knows how hard it is to find readily what work was done a few years before, especially by a predecessor. The permanent card file of activities lends continuity to the business of an office.

Other uses for visible indices will no doubt occur to the reader in connection with his special problems. They are especially valuable when large numbers of cards need to be filed for ready reference. The eye can find a card quicker than the fingers.

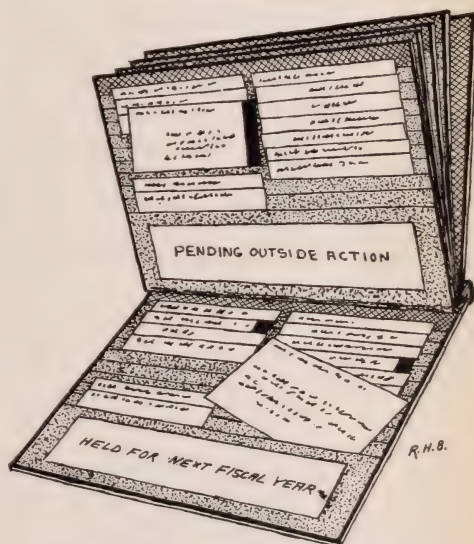
EXPEDIENTS FOR SMALL OFFICES

Some health officers may not feel like

going to the expense of purchasing visible file equipment. One of the following expedients may serve the purpose.

1. For 3 by 5 cards, $\frac{3}{8}$ of an inch of each card to show, take large sheets of wrapping paper and cut them into strips 11 inches in width. Paste the ends of the strips together to form new strips each about nine feet in length. Each of the new strips will provide for 24 cards. Two and one-half inches from the end of the strips make a fold toward you, $2\frac{1}{8}$ inches further down make a fold away from you; continue this alternation until the whole strip is folded. Staples

FIGURE 1



Sketch of visible index in which cards are slipped into pockets.

should then be run down the sides and the middle to form two sets of pockets for the cards. The backs of the strips are then pasted to sheets of board approximately $8\frac{1}{2}$ by 11 inches, one on each side, and the boards are fastened into a loose-leaf binder. The disadvantage of this system compared with the purchasable equipments is that it is necessary to remove the card from the pocket in order to write on it, or to read anything on it except the legend. However, it has the advantage that the legends

appear at the top of the cards. (See Figure 1.)

2. With the following method, the record is written on slips of paper of varying lengths instead of on cards. Cut sheets of paper into strips, 20 of each size, the sizes to be $2\frac{1}{2}$ by 9, $2\frac{1}{2}$ by $8\frac{3}{4}$, etc., down to $2\frac{1}{2}$ by 5. Divide the strips of each size into four groups, so arranged that in each group the $2\frac{1}{2}$ by 9 will be on the bottom, the $2\frac{1}{2}$ by $8\frac{3}{4}$ next, and so on, with the tops of the slips in alignment. The four groups are then slipped into a spring back loose-leaf binder. The legends are written on the quarter-inch of the slips which is exposed. The slips on top of any given one can easily be lifted up to permit entries on it. As soon as any matter is settled, the slip is torn out, revealing a fresh one of the same length. The above contemplates 68 entries. Two or three sets can be kept in the same binder by inserting a flexible board between them. In this way as many as 200 entries can be carried at the same time. (See Figure 2.) This method does not make a satisfactory permanent record, nor can the slips be moved from one section to another. Colored signals, however, can be pinned to the slips. En-

tries can be made and consulted more rapidly than in the case of the first suggestion.

THE PART CARD INDICES MAY PLAY

Do you index the important letters you write? Do you index published articles to which you may need to refer in the future? Do you index important memoranda or statements setting the precedents of your office? Possibly you have not realized what a valuable adjunct the card index can be to you. The ease of preparation and facility with which the index can be kept up to date are two of its attractive features.

A list of the card indices kept in the office under consideration may suggest to the health officer ways in which he can improve his use of this office method:

1. Index of completed activities. As suggested above, the visible index cards go into such a permanent card file as soon as an activity is completed.

2. Information letter index. Carbons of outgoing letters containing information which may be required in the future go into a special alphabetical file and are indexed by a clerk on cards. Some index of this sort is necessary, if an office is not to lose track of the vast amount of information given out, information which may have required hours to assemble in the first place.

3. Publication index, covering bulletins and articles published by the organization or by its staff.

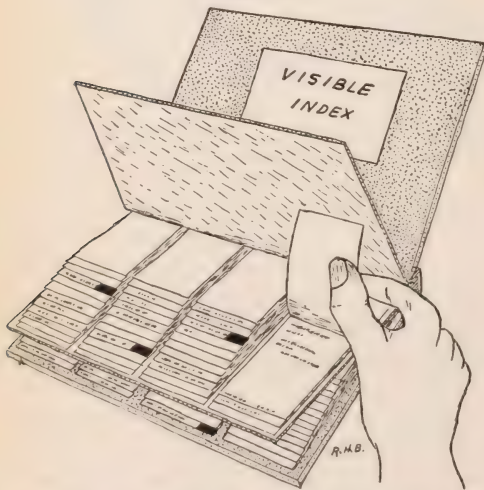
4. Circular letter index, covering instructions issued in regard to the work of the office.

5. Reference file index. A description of a decimal system file for papers which may need to be referred to in the future is described below. A card index of the jackets and important papers in this file is kept.

FILING INFORMATION WHERE IT CAN BE FOUND

"Where is that report I prepared a couple of years ago on coöperation with

FIGURE 2



Sketch of visible index in which record is made directly on slips of paper of varying lengths.

industrial physicians?" asked the health officer.

"I do not remember it," replies his assistant. "Do you know what was done with it?"

"I suppose I dropped it in the file basket."

"There are a number of places where it may be. I'll look."

No doubt the report is somewhere in the office and perhaps it will be located, after the office work has been disrupted in the search. Perhaps a clerk will finger it over while hunting and not recognize it, because it had nothing on it by which it could be easily identified. Perhaps it has been put under an entirely different subject by a clerk unfamiliar with the work of the office.

Any executive would appreciate the opportunity of having reports, memoranda, financial statements, pamphlets, miscellaneous information and other papers to which he will need to refer at some future time filed so that they can be located instantly by a clerk at need. In the office considered in this article, this matter is handled in two ways.

In the first place, the assistant to the executive keeps on his desk a scrap book for papers which must be referred to constantly. As these papers are pasted in the book, they cannot be misplaced; as they are carefully indexed, they can be found readily without the necessity of interrupting a clerk every time a paper is needed. The book takes little room and is available for the use of the other clerks in the office.

However, there comes into this office a vast amount of material which may be needed for reference at some future time, but which is referred to only occasionally. Some of it forms an invaluable record of office precedent and similar matters. Filed in the usual way by clerks, a large proportion of these papers would not be located at need. It has, therefore, been found necessary to establish a "Reference File" on a rather comprehensive scale, with a special card

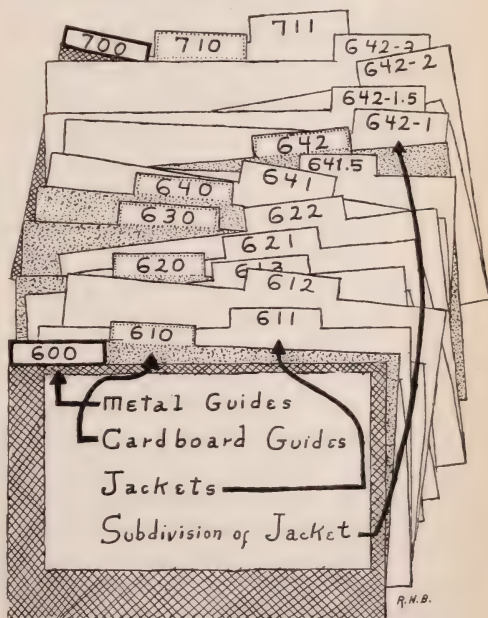
index. For convenience, a variation of the decimal filing system has been used. Each paper bears a number and can be returned to the file without difficulty.

The file has nine main classes, separated by metal guides, as follows:

- 000 General
- 100 Reports of previous activities
- 200 Data on present or contemplated work
- 300 Legislation
- 400 History, policy, and development
- 500 (Blank)
- 600 Congresses and Associations
- 700 Committees and Boards
- 800 Biological Products
- 900 Forms.

Each of these classes is divided into nine or less divisions, separated by cardboard guides. For instance, the 000 class would be divided into 010, 020, 030, etc. The jackets come under these divisions, and the third figure in the number represents the jacket. If one jacket

FIGURE 3



Sketch of arrangement of sample guides and jackets for decimal filing system. (Legends omitted for simplicity.)

is 012 and another 013 and it is desired to insert a jacket between them, the number 012.5 is used and an unlimited num-

ber of insertions can be made in the same way. Occasionally a jacket will become too full for convenience. It is then subdivided, the jacket becomes in reality a guide, and jackets somewhat less deep are placed behind it, their numbers being separated from the main number by a hyphen. For instance, if jacket 472.5 is subdivided, the resulting jacket would be 472.5-1, 472.5-2, etc. It will be observed that the hyphen plays the part of the decimal in the usual system, while the decimal is used here to permit a large number of jackets in each division. (See Figure 3, preceding page.)

This system requires filing rigorously by subjects—quite an undertaking. There will naturally be a typewritten outline of the guides and jackets, additions being made when new guides or jackets are required. In this office it was found that, while the assistant necessarily chose the guide and jacket headings in the first place, the clerks were capable of filing individual papers without assistance.

HOW EACH IMPORTANT PAPER MAY BE EASILY INDEXED

Presumably a file of this character would at least have an index, on cards or otherwise, of the headings on the guides and jackets. If cross-reference sheets are used in the file itself (letting the paper go into one jacket and the reference sheet into another), a more exhaustive index could generally be avoided. The writer, however, wanted a file that would invariably produce the goods. He also felt that if a paper was worth filing at all for reference, it was worth a little attention at the time it was filed. He has, therefore, contrived a compromise between merely indexing the headings on the guides and jackets and indexing the individual papers.

In the first place, there is a card index of the headings themselves; but where a paper of any importance is to be filed, it is briefed on a distinctively colored slip pasted or stapled across the top of the document, and the principal words of the brief are indexed by a clerk on cards to

be filed with the other index cards. Take, for instance, a paper reporting the cost of a malaria campaign in a certain section of a city for a given period. The brief might read:

"Statement of Cost, Malaria campaign Greenwich addition summer 1920. Compiled by Stone. Campaign conducted by Henry. (Financial data—Mosquitoes—Ditching costs.)"

Words to be indexed are underlined. In parenthesis will be added subjects not appearing in the title, but under which the paper should be indexed. This brief would make the paper clear to the clerks. Since it would carry the decimal number of the jacket in which it was filed, there would be practically no danger of its being misplaced. If the executive later desired to destroy the paper, a clerk could withdraw from the index file the cards referring to it, because the paper would bear on its face the subjects under which it had been indexed, possibly years before. All that the health officer or his assistant would need to do under this plan would be to dictate the brief, indicating the words under which it should be indexed; and yet months after filing, the paper could be brought forth, almost automatically. The file needs little upkeep attention from the executive.

Does this look like too much system—too many cooks? Think of having filed in an orderly manner that mass of typewritten and printed memoranda and statements that clutter up so many offices and are unintelligible except to the person who was originally concerned with them. Such a reference file builds for the future.

OTHER SUGGESTIONS WHICH MAY SOLVE YOUR OFFICE PROBLEMS

Space will not permit a discussion of all of the methods used in this office for the transaction of business. Not all of them would be suggestive to the health officer, and no doubt some of them could be simplified or improved. By way of conclusion, however, it would seem well to summarize briefly a few of the meth-

ods not covered above. They may suggest a way out of an office problem that has been troubling you.

1. Outgoing letters go from the stenographers to a clerk in order that all typographical errors may be caught. This relieves the executive and his assistant of the necessity of watching for such errors. It also has the advantage of keeping that clerk thoroughly familiar with all action taken by the office.

2. To prevent failure to take action at the proper time, the office has a "Tickler" file. Colored sheets referring to any particular matter go into this file, carrying at the top a certain date and the initials of the person to whom the paper is to be given on the date indicated. When desired, an extra carbon on paper of the same color can be made of any outgoing letter; this will then be filed for attention under a certain date, permitting a follow-up letter if necessary at that time. The "Tickler" file can be used by any clerk, and is used by most of them. Sheets are filed for many of the important matters which are pending, the actual correspondence going into a pending file, arranged by subject. If the correspondence itself were to go into the "Tickler" file, it would be lost to view until the date it carried. If the matter has not been settled by the time the colored sheet is returned, it is either followed up or the sheet is filed for attention on a future date.

3. Clerks are requested not to keep individual files. They make use of the general files, and in this way when the clerks are away papers are not hidden in drawers when they should be getting attention. Desks are kept clean of all but passing papers. The Visible Index is used for a number of purposes by the clerks, and the records kept in it are open to easy inspection by all. If a "Tickler" file paper initialed for a clerk comes to attention while he is absent, it goes to the person covering his work, or to his immediate superior.

4. Do you have difficulty in getting

your clerks to continue to follow instructions once given them? To avoid this difficulty, the office in question issues a set of numbered instructions which are routed to each desk once a month, read, and checked by the personnel. Systems once organized therefore keep going.

5. The assistant to the executive uses a note book which he carries in his pocket. On his desk he keeps under a glass paper-weight, a statement of his duties for the day, one of which is to look through the note book. Items put in the book while he is away from the office are therefore automatically brought to his attention on his arrival.

6. The assistant also keeps a loose-leaf book in which he files abstracts of important articles. The preparing of such abstracts fixes the subject in mind, and as the material is indexed, there is always ready reference to books or articles.

SELLING THE SYSTEM TO THE OFFICE

The health officer faces the fundamental need of educating his force to conduct his business systematically and in accordance with his policies and desires. He is handicapped in comparison with business in that he cannot pay the same salaries. He must, therefore, to a large extent, take untrained material. What can be done with such material by creating the proper coöperative spirit in an office is remarkable. From this point of view, the principles stated above—to give the clerks systems intelligently worked out, based on the precise needs of the particular office, and to train them to carry out these systems—take on a new meaning. It is necessary not only to establish the systems, but to sell them to the office force. It is by the creation of a proper spirit in the office—for want of a better term, this spirit may be called team play—that it will become possible to institute methods and secure the enthusiastic interest of the force. But infinite pains is also the price of teamwork.

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DEVELOPMENT OF COUNTY HEALTH WORK

The county health department has definitely demonstrated that it is an essential part of our public health machinery. It establishes a unit of working force in the subdivisions of a state, capable of joining hands with the state board of health on the one side, and with the individual in his home on the other. It affords the machinery for carrying out effectively programs which may be directed to any one of the numerous outstanding public health problems.

Within the past three or four years, approximately one hundred twenty-five counties, representing twenty-one states, have inaugurated county health work on a full-time basis. It is being advocated in many other states, and where necessary, laws permitting it have been submitted for legislative action.

The principal task which now confronts those engaged in this field involves improvement in the quality of the work, and this in turn involves securing a better trained personnel, and improved methods of procedure in dealing with some of the public health problems.

A number of health officers engaged in the work are taking special training in institutions such as the Johns Hopkins School of Hygiene and Public Health in Baltimore. Others are receiving special training at health officers' institutes covering from one to two weeks of intensive training under well qualified instructors.

For the purpose of evolving more effective methods for dealing with the problems relating to county health work, a conference was held December 15 and 16, 1920, at the Johns Hopkins School of Hygiene and Public Health, at the invitation of the School and the International Health Board. Representatives of the United States Public Health Service, health officers from ten of the states which have taken the lead in the development of county health work, faculty members of the School, and others interested in the subject were present. The various problems were dis-

cussed in open session, and a committee for each was appointed to submit a report for the consideration of the conference. The reports as modified and approved by the conference are compact, specific, and represent the combined views of a majority of those experienced in the work. They should be of value to all who are interested in the development of improved health service. Accordingly, they are being published elsewhere in this issue of the JOURNAL.

J. A. F.

RELATION OF BIO-CHEMISTRY TO PRACTICAL HYGIENE

It is just 30 years since the first Section, that of Chemistry and Bacteriology, of the American Public Health Association was formed, largely through the activities of Professor Wyatt Johnston of McGill University. The scientific problems in public health at that time were essentially included within these subjects and water supply questions and questions of sewage disposal chiefly occupied the sessions. The outcome of the efforts of these specialists has been the publication of a "Standard Methods of Analysis of Water and Sewage," which in its various editions has been the hand book for laboratory workers in all parts of America.

The rapid expansion, however, of science as applied to public health could not long be limited to these subjects, and since that time amongst other Sections that on Food Supplies and Drugs has been formed and for five years has brought in many valuable reports on all phases of these subjects as they affect the public health. These reports, however, have dealt rather with the macroscopic than the microscopic phases of the subject. Today, however, through the work being done in hundreds of laboratories the problem of foods is being re-studied along quite new lines, based upon scientific facts in relation to the stereochemistry of the hydrocarbons and the vital functions of enzymes. The old chemists had discovered polymerism in organic compounds and taught us much regarding the variation of products through their interaction with other chemicals; but it has remained for the "New Medicine" to indicate the intimate relations of enzymes whether in the food or in the tissues, in order that the meaning of metabolism whether in plants or animals, can in some degree be understood.

Assuming that energy in matter, as the earth became fitted for life on its surface, was adequate to supply vital functions to the simplest organized materials, we need only recall the life functions of the single-celled amœba and thence proceed from the metazoa up to and through the vertebrates to man, in order to estimate the advances in complexity of organization and function, based upon the differentiation of the cells, whether those of the blood or of the tissues nourished by it and which reach their climax in the pyramidal cells of the brain cortex where thought is elaborated. It is this increasing exactness of our knowledge, which is making real advances possible in public health, whether it be in the bio-chemistry of milk and other foods or in the complex bacterial actions which are carried on in the sewage septic tank. We used to say foods were composed of proteins, fats and hydrocarbons and that they were acted upon by saliva, gastric juice and the *succus entericus*. Today it is of much greater importance to know of what saliva is composed or what is pancreatin and why does either of these activate on food and how?

For forty years we have been analyzing milk into its three constituents, have been making butter and cheese, have certified to the bacterial contents of milk and its freedom from *B. tuberculosis*. This has meant much, but what has it told us of its more intimate biochemical constituents, of its casein and its caseinogen and the essential actions on these of the juices of the digestive tract and yet more of the influence of the vitamins contained in the milk, which seem to be for us elusive mysteries of Nature's laboratory? It is, indeed, all a new world, hitched so far as personal hygiene is concerned to that yet more mysterious

entity spoken of as the vegetative or sympathetic nervous system of man. Barring the essential enzymes in the food, this seems in itself a lifeless thing as regards the human system; yet it is subject to the caprices of a dozen biochemical products, which activate or are inhibited by that elusive something we speak of as "mind."

Why, for instance, should the sight of or the thought of food set the parasympathetic nerves to work and allow certain glands of the mouth to pour forth their highly organized cell contents, or yet more, how does the delicate control of the autonomic system need to be constantly exerted over these and other endocrine glands, that they should be enabled to supply exactly the necessary amount of enzymes for our daily needs.

But equally elusive is the bio-chemistry of the enzyme itself. What kind of prescience should indicate to a something we can scarcely yet analyse, its duty in the catalysis of foods? Buchner seems indeed, to be approaching the solution of the problem when he can show that the growth of yeast produces an enzyme, a natural something which can be expressed from yeast cells, and which instantly induces alcoholic fermentation. This discovery has resulted in the broad generalization that all chemical reactions mediated by cellular activity are due to a similar mechanism and thereby all intermediate metabolism in plants and animals is explained. Possibly!

It is in this direction we turn for an explanation of the marvels of immunity and anaphylaxis and the further insight into those mysterious somethings spoken of as antibodies or antigens, the amboceptors and complements, terms which are daily being used in the laboratories and are gradually coming to have some meaning for the uninitiated. So it is that we see the dreams of Duclaux and Pasteur coming true through the investigations of such men as Osborne, Mendel and other workers amongst us, who if they cannot exactly tell us what mind is, can at least, indicate for us something of the delicate metabolism of the body governed by it and so add something to the armamentaria of our public health defences.

PETER H. BRYCE.

PRESIDENT HARDING AND PUBLIC HEALTH

Like Theodore Roosevelt, President Warren G. Harding believes that the nation's health is our greatest asset. With a view to coördinating the health and welfare activities of the government he has asked Brigadier General Charles E. Sawyer, his personal physician, to make a study of all such activities. In an interview with a representative of the JOURNAL, General Sawyer stated that a consideration of the subject of public welfare involves three questions which are closely related. They are education, public health, and social service. These three matters are being studied as the foundation upon which to build the superstructure of public welfare, and if the survey proves it worth while, there will be a special government department under which these affairs will be carried on. General Sawyer made the following statements, which are quoted verbatim:

"The President is whole-souled and generous and has at heart the desire to increase the public welfare. It is his ambition to make the United States exemplify the best in welfare as well as in all other departments pertaining to the government. He regards the public health as the American nation's greatest asset. It is his desire that all official agencies in public health should be so brought together as to create the greatest efficiency and so help to make us the strongest people of the world, both mentally and physically."

General Sawyer also expressed his own personal opinion that there was nothing more important in government than the public health.

J. A. T.

LETTERS TO THE EDITOR

EDITOR AM. JOURNAL OF PUBLIC HEALTH:

I wish to acknowledge the justice of the exception taken by Dr. Wendell C. Phillips to the misstatement made in the *Bulletin of the New York Medical Association* for October, 1921, in relation to the Narcotic Drug Bill endorsed by the Medical Society of the State of New York and known as the Cotillo Bill.

The misstatement copied in your JOURNAL and to which Dr. Phillips now takes exception was as follows: "This bill which would have deprived the physicians of this State of the right to treat cases of drug addiction at any stage of this disease except under institutional restraint was also advocated and offered by the Medical Society of the State of New York."

Dr. Phillips' correction was published on the eve of a hearing before the Governor of New York on an identical measure passed by the Legislature of New York and known as the Fearon-Smith Bill.

This bill had the solitary endorsement of the Medical Society of the County of New York. It was opposed at this hearing according to the reported accounts by all the other County Medical Societies of the State under the lead of Judge Cornelius F. Collins of the Court of General Sessions of this city.

At this hearing Gov. Miller plainly indicated by his examination of Dr. Wm. P. Healy, the spokesman for the New York County Medical Society, that he took the view that the clause in the bill favored by this society and which Dr. Phillips quotes in his letter to you "to treat such cases by personal administration of narcotics by the physician" did practically prevent physicians from treating such cases even if his "right" to do so still remained. If the word privilege had been used instead of the word right in the phrase objected to by Dr. Phillips its correctness could not have been questioned where the form of treatment, as was shown at this hearing would have re-

quired from two to six visits a day either to the patient by the physician or vice versa.

In excuse of this misstatement it may be said that this issue of the *Bulletin* was got out hastily on the eve of the Gubernatorial election in New York State and sent to the 15,000 physicians of New York to advocate the election of Judge Miller "not as a political matter but as a matter of professional concern to every physician in the State." This stand was taken as a protest to Gov. Smith's persistent advocacy of Compulsory Health Insurance and on account of the inhuman, illegal and unscientific act of Compulsory Registration of Drug Addicts by his Narcotic Drug Commission in the City of New York.

In only three cases was the justice of this action questioned by the physicians addressed. One of the objections to this course was made by a Deputy Commissioner of Narcotic Drug Control, another was made by a private practitioner and the third by Dr. Wendell C. Phillips in your columns.

Judge Collins sentenced the first and only physician convicted of a technical violation of the drug laws of the State of New York in correction with the keeping of his records. This was about three years ago and although this sentence was suspended the change in the attitude of the local judicial authorities can be judged by the position taken today by Judge Collins in regard to the rights of the physicians in prescribing for addicts at the hearing before Governor Miller. Everywhere else in the State of New York a similar change has taken place except in the Councils of the Medical Society of the County of New York.

The same form of medical educational missionary work which has been so successful elsewhere still remains to be done in this the last remaining place to resist its influence.

JOHN P. DAVIN, M. D.,
Exec. Sec'y, N. Y. Medical Association.
New York City,
April 27, 1921.

BOOKS AND REPORTS REVIEWED

Mental Self-Help. *Edwin L. Ash, M.D., M. R. C. S. New York: The MacMillan Co., 1920. Pp. 119. Price, \$1.60.*

This book presents in simple form and language advice as to mental health. While a great many of the recommendations sound like truisms, their repetition will certainly do the inquiring mind more good than many of the more elaborate hypotheses advanced in recent times.

There is a decided religious trend to the book, showing intimate connection between medicine and religion in the philosophy of life. Much of the hustling and bustling of the modern times is decried and simplicity of living recommended. A wholesome book.

A. W. STEARNS, M. D.



Everyday Mouth Hygiene. *Joseph Head, M.D., D.D.S. Philadelphia: W. B. Saunders Co. Pp. 67. Price, \$1.00.*

Considering the recent emphasis placed upon the importance of the mouth as a source of secondary infections affecting the bodily tissues, there have been fewer new publications preaching the doctrine of mouth hygiene, than might be expected. Books on Mouth Hygiene issued in the past have covered the subject so comprehensively that average readers would not attempt to digest them. Some of the small leaflets of dental toilet instruction have, on the other hand, been so brief as to fail to excite the reader's interest. Dr. Head's volume seems to strike a happy medium in the length and thoroughness of its treatment of the various phases of the subject.

We experience a pleasant relief from the diction that too often comes to the public from professional men who are in the habit of writing essays for presentation before scientific audiences. The text expresses the subject matter in terms easily understood by the average layman and, on the whole, the book is interesting as well as instructive.

Great stress is laid on the proper use of floss silk as a cleansing instrument and a rapidly increasing number of dental practitioners will agree with the author in his opinion that, "den-

tal silk, properly used, is far more important as a means of cleansing and preserving the teeth and gums than the tooth brush."

Unfortunately a special form of tooth brush having one-quarter inch bristles is insisted upon as the only type that will effectively meet requirements. We believe that a work addressed to the public should express the consensus of professional opinion on such a point and the majority of dentists would not recommend a brush of this shape for general use.

On the whole, the book, *Everyday Mouth Hygiene*, is a valuable addition to the literature on this important subject.

EDWIN N. KENT, D. M. D.



Industrial Housing. *Morris Knowles. New York: McGraw-Hill Book Co. 1920. Pp. 408.*

When an industrial company decides to build housing accommodations for its employees, it is entering into an entirely new line of business, and it too often does not appreciate its complexities and the value of expert advice. Until recently one practical difficulty has been that in order to get such expert advice it has been necessary to consult real estate men, architects, town planners, engineers, contractors and builders. Their various recommendations usually conflict and the industrial manager who is not a housing expert finally has to use his own judgment in harmonizing their various opinions, or else rely upon the advice of only one or two of said experts, which may be rather prejudiced or limited. The result is that good housing on an economic or financially sound basis is rarely realized in industrial housing. The houses are either badly built or arranged, or the site is poorly chosen or planned, or the cost of the houses or development is far in excess of what it should have been. Only recently have housing companies been formed whose business it is to combine the work of the experts in different phases of the housing problem, so that the industrial manager can obtain the best practical results by employing a single company to build the houses rather than follow the old method of consulting numerous experts and then be unable to decide wisely which advice to take.

Mr. Knowles' book on "Industrial Housing"

shows a rare combination of a thorough understanding and appreciation of all the most important elements necessary for good houses and a knowledge of the practical methods of reaching the best results. For a housing company or for an industrial manager who is in a dilemma regarding a housing problem, it is a most valuable book. Not only are the essentials of the best housing standards clearly shown in considerable detail, but all practical problems are considered. As Mr. Knowles hoped, the book not only shows "the need of studying all factors, but the probable weight needed to be given to each; with the result that a happy and judicious decision will result in any given case after a review of all the conditions." He gives not only the factors involved in deciding upon the best site and methods of town planning, but he shows how the streets, pavements, sewerage systems, and other utilities should be constructed, and how the disposal of garbage and waste should be arranged. A combination of pleasing design of houses and economic cost is shown to be not only possible, but practicable, and the problems of disposal or management of the houses when completed are wisely set forth. If more housing developments should be built with a clear understanding and following of advice such as Mr. Knowles gives, there would be far less cause for abuse of "industrial housing" and for regulation of housing for the safety and health of the public.

HENRY R. BRIGHAM.



Epidemic Respiratory Diseases. *Opie, Blake, Small and Rivers. St. Louis: C. V. Mosby Co., 1921. Pp. 402. Price, \$6.50.*

This book is a partial account of the work done by the commission of army medical officers which was detailed to study pneumonia at Camp Funston and Camp Pike. Besides the above officers, Maj. Allen W. Freeman was a member of the commission and he will publish a separate report on the epidemiology of influenza and pneumonia at Camp Pike. The present volume deals chiefly with the bacteriology and pathological aspects of influenza, bronchitis and pneumonia, but the particular merit of the work is that, all along, the laboratory findings are correlated with the epidemiological data. Methods of control, too, are not neglected.

The bacteriology of influenza receives much attention and the authors are among the comparatively few who are swinging back to the

idea that Pfeiffer's bacillus is the causative agent. They certainly show that it is found with very great constancy in the disease and, though by no means claiming that the demonstration is conclusive, they present evidence which is very convincing. The last chapter deals with the pathogenicity of the bacillus for monkeys.

The different types of pneumonia occurring in non-epidemic periods as well as in connection with influenza and measles were carefully studied and are discussed in connection with the clinical picture and the epidemiology. A very vital question for those interested in preventive work is the source of the germs causing pneumonia. Are they the pneumococci and streptococci commonly found in the mouth and which become more actively pathogenic because of lowered resistance of the subject, or are they more virulent types spreading from man to man by contact and droplet infection. The relative importance of these sources of infection receives critical consideration.

The etiology of pneumonia is still too imperfectly understood for health officers to formulate methods of control which are assured of success. Studies like these, repeated at different times and in different places, are needed to complete our knowledge of this group of diseases. CHARLES V. CHAPIN, M.D.



Types of Mental Defectives. *Martin W. Barr, M.D., and E. F. Maloney, A.B. Philadelphia: P. Blakiston's Son & Co., 1920. Pp. 179. Illustrated. Price, \$3.00.*

This is a very interesting case record of defectives. A great many different types are described and illustrated, giving the reader a rather clear idea of the different degrees and types of feeble-mindedness. Much of the modern advance in this subject has been omitted.

Heredity includes many unrelated things. Prenatal influence is frequently mentioned in idiocy; epilepsy as a complication is passed over; the statement that a mother's second cousin became insane because of masturbation is given a place in etiology and so, while the book is readable and useful, its form and subject matter are somewhat antiquated.

A. W. STEARNS, M.D.



Teaching the Sick. *Manual of Occupational Therapy and Re-education. George Edward Barton. Philadelphia: W. B. Saunders Company. Pp. 163. Price \$1.50 net.*

In the preface the author states that the

purpose of the book is "to give a clear, concise and truthful account of what has been actually accomplished in the way of Occupational Therapy and Re-education." These facts have proved themselves through the personal need of the author, and his further dealings with the sick and with those teaching the sick.

The first thirty pages give a very general outline of the fundamentals of occupational therapy. That "there are no more cripples except of the will," has been proved again and again among the disabled, especially in our more recent work among the wounded and crippled soldiers during these past five years, and much of the restored courage and renewed activity is due to the early application of occupational therapy. The author points out that the "needs of war have not exceeded the needs of peace," and that the same principles apply to the reconstruction of all sick people. It is clearly emphasized that the beneficial therapeutic effect must be the first consideration in giving any kind of work to the patient; "The true relation of the work of the sick to that of the well man is not that of the percentage of normal labor which the sick man performs, but it is the amount of work above zero which has been performed."

There follow quotations from the French Minister of Agriculture showing the need in that country for the "return to the land," how it has been encouraged in every way and the splendid results accomplished by the crippled French soldiers. This the author has made applicable to the United States, and the last two-thirds of the book cover the specific work carried on at Consolation House, but showing what could be done by the sick men throughout the country were they trained to take up and successfully reclaim the abandoned lands.

A very helpful and lucid treatise is given on mechanical drawing and how from very elemental beginnings it can be made an asset in almost every trade in life, but especially developed along the farming lines.

Granted its very real value, it would seem as if in the accentuation of mechanical drawing the author is contradicting his knowledge that the sick are difficult to interest and to handle. There are thousands of sick whom the teacher with all possible tact and skill could never interest in mechanical drawing however presented and

disguised. And though women have worked with it and have eventually built pigeon houses, it is obviously not the type of work for which the majority of them are fitted or in which they are interested. Many who have worked with the sick find that the knowledge that the work will be of future value to them is no stimulus whatever. They are often sick of their work and everything allied to work is shunned. The contact between patient and teacher is in that case made through the appeal of some color or object possibly with little educational value, but which means an article quickly completed and so far as possible, of artistic value and good craftsmanship. Basketry, weaving, modeling, chip-carving, etc., are only permissible, according to the author, if necessary for the first step in the "rebirth of the desire to do," after this it would seem as if the development of wood work as it pertains to the needs of those interested in farming was the ultimate object of re-education.

Books on Occupational Therapy are still few and although in this small volume the author's outlook for the patient is somewhat circumscribed there is no doubt that directors and occupational therapy aides will find in it much of real value, both theoretically and practically.

HARRIET A. ROBESON.



Optimistic Medicine. By a former Insurance Man. Philadelphia: F. A. Davis Company. 1920. Pp. 318. Price \$3.00.

This is a well-written and sensible book. One can see no good reason why it should be anonymous. It is addressed primarily to the physician. Its main thesis is that practitioners have generally missed large opportunities for service in the capacity of advisers and instructors in matters of hygiene. They have narrowed their attention too strictly to the passing conditions for which they have been consulted. An attractive picture is drawn of the family doctor, knowing the constitutions as well as the maladies of his patients and by his occasional counsel saving them from many misfortunes. It is urged that he has too often refrained from assuming such a function through fear of seeming officious or of soliciting employment. The argument is developed at length and with a wealth of examples.

PERCY G. STILES.

ASSOCIATION NEWS

A. P. H. A. JUBILEE VOLUME

A volume portraying the history of Public Health during the past half century is to be issued in the Fall of 1921 in commemoration of the fiftieth Annual Meeting of the Association, a Jubilee Volume. The book will cover some four to five hundred pages and will be composed of about 20 essays, each written by a specialist in his branch of Public Health activity.

While the volume will be devoted primarily to the developments of Public Health during the last fifty years, it is to be expected that the authors will naturally portray a background of the developments prior to 1872, when the Association was organized.

The nature of the volume is best indicated by the following table of contents, the titles in which are not absolute, the authors having the liberty to change them to some extent.

1. Microbic Theory of Disease and Its Utilization in Public Health Work. Prof. F. P. Gorham.
2. A Half Century of Progress in Life Prolongation. F. L. Hoffman, LL. D.
3. Quarantine and Its Effect on Public Health. Surgeon General H. S. Cumming.
4. State and Municipal Control of Disease. C. V. Chapin, M. D.
5. Collection and Utilization of Vital Statistics in Public Health Work. W. H. Davis, M. D.
6. Water Purification and Its Effects on Public Health. Prof. G. C. Whipple.
7. Garbage and Sewage Disposal and Its Effect on Public Health. Rudolph Hering, D. Sc.
8. Control of Offensive Trades and Trade Wastes in Its Effect on Public Health. Prof. E. B. Phelps.
9. Inspection and Control of Foods, and Their Influence on Public Health. Carl L. Alsberg, Ph. D.
10. Milk and Its Influence on Public Health. C. E. North, M. D.
11. Child Welfare and Conservation of Infant Life. Philip Van Ingen, M. D.
12. Industrial Hygiene and Its Effect on Public Health. George M. Kober, M. D.
13. Housing and Building Laws and Their Influence on Public Health. Lawrence Veiller.
14. Conservation of Foods by Cold Storage, Dehydration, Canning, etc. Prof. S. C. Prescott.
15. Insects as Carriers of Disease and Their Relation to Public Health. L. O. Howard.
16. Ventilation in Its Relation to Public Health. George T. Palmer.
17. History of the American Public Health Association with Biographies of Deceased Past Presidents. Dr. Mazyck P. Ravenel, President of the Association.
18. Fifty Years History of Public Health Work in the Dominion of Canada. Dr. Peter H. Bryce.
19. Fifty Years History of Public Health Work in the Republic of Mexico. Dr. A. B. Vasconcelos, Editor of the Medical Gazette of Mexico.
20. Fifty Years History of Public Health in the Republic of Cuba. Dr. John Guiteras.
21. History of the New York Board of Health. Dr. Stephen Smith, First President of the Association.

The intention is to sell this volume to the members of the American Public Health Association at cost. Non-members may obtain the volume by paying the customary subscription price for volumes of this type. Further announcements will be made during the coming months.



Hotel Astor will be the Hotel Headquarters of the Fiftieth Annual Meeting of the A. P. H. A. A very important set of Programs is in preparation. Have you made up your mind to attend?

REPORT OF THE COMMITTEE ON SMALLPOX

Read before General Sessions, American Public Health Association, at San Francisco, Cal., Sept. 16, 1920.

[In reading this Report Dr. Charles J. Hastings, Chairman of the Committee, stated that he was probably appointed on account of a desire for information on the outbreak of smallpox at Toronto in October, 1919.]

For years Toronto has been practically free from this disease, in fact it was not unusual for twelve months to pass without a single case. An epidemic in Montreal in 1885, at which time there were more than 3,000 deaths, and following that a number of cases occurred in Toronto with a comparatively high death rate.

This, as is usually the case, resulted in our population being well vaccinated. Even the Board of Education was so intimidated that it enforced compulsory vaccination of all children before entering school. However, the epidemic had not long subsided when politics began to assert itself, resulting in the repeal of this order, and consequently when smallpox struck our city last year, it had an exceptionally fertile field, a huge population of unvaccinated children and adults.

In presenting this report, we feel that it would be a reflection on your intelligence even to refer to the controlling influence of vaccination on smallpox, inasmuch as no one who is capable of intelligently understanding and passing sane judgment on any problem can longer question the fact that there is no other problem in the field of preventive medicine and no other scientific fact so conclusively demonstrated as that of the controlling influence of vaccination and re-vaccination over smallpox.

Your Committee, therefore, wishes to draw attention to the difficulties that one encounters in an epidemic of this exceptionally mild type of smallpox, which has been distributed more or less over this Continent for the past 20 to 25 years.

The most striking feature of this type of the disease is the fact of its continuing so attenuated through all these years. It is true that Jenner, Welch, Schamberd, Sydenham and other early writers were familiar with this mild type of the disease; in fact, in the eighteenth century there were different outbreaks so mild that the mortality was as low as from one-half to one per cent. However,

these milder forms did not continue and were usually followed soon after by a much more typical form of the disease, and with the usual high mortality.

An interesting incident occurred in this connection some eight years ago in Carbondale, Pa., where there was an extensive outbreak without any deaths; and at the same time smallpox of an European importation, a much more severe strain, developed in Pittsburgh, with a mortality of 27%.

Toronto Epidemic.—Scattered cases occurred in our city as early as June, 1919, but did not take on epidemic form until the late autumn. As is usually the case, the medical profession was misled by there being a large number of cases of chickenpox in the city at that time, there having been as many as 100 or more cases reported every month during the summer months. However, many of these cases reported were found to be adults and were no doubt smallpox. These cases began to arouse suspicion, in consequence of which some of the physicians began to request that our diagnostician see the case in consultation wherever there was doubt. It was then found that a large number of cases that were being reported as chickenpox were really a mild form of smallpox. The symptoms were the sudden onset, chill, followed by fever, ranging from 102° to 105° within the first 24 hours, headache of a more or less severe type, aches and pains in the limbs and body generally; lumbar pains in about 50° of the cases; nausea and vomiting in about an equal proportion; acute abdominal pains, in some even simulating appendicitis. These symptoms continued for about three days, gradually abating in severity. On the fourth day the patient was, as a rule, much improved, the degree of improvement depending on the severity of the original symptoms.

During the following 24 hours the rash appeared: first, along the forehead or around the mouth, on the inner surface of the forearms, then spreading to the scalp, face and shoulders, taking about 36 hours to reach the lower extremities. Macule and papules had a definite feel to them, turning to multilocular vesicles on the third day, gradually becoming pustular on or about the sixth day. It was often possible to find only three or four truly

umbilicated vesicles at one time. The pustular stage was well advanced about the eighth day and scabbing began almost at once, leaving in two or three weeks a red scale-covered base without pitting. Little or no rise of temperature was noticed during the onset of the pustular stage, usually not more than from one-half to one degree. Patients would express themselves as feeling fine except for irritation and discomfort from the eruption.

Explanation of Spread.—A community in which the children and young adult population were unvaccinated afforded a fruitful field for smallpox to spread in, either mild or otherwise. Secondly, fears of quarantine, congested living quarters, and the crowding together incident to the onset of cold weather and shortage of houses, all favored the rapid spread of this so-called epidemic of chickenpox. Thirdly, the chief difficulty was one of diagnosis. A large number of the medical profession felt that it was only a severe form of chickenpox, and others that it was not true smallpox, but a hybrid form. Both of these groups seemed to have some grounds for their contention.

Most of the arguments advanced for failure or refusal to diagnose these cases correctly, centered around the character of the eruptions of which there were undoubtedly wide variations. In many the lesions were very few in number, a goodly number having only half a dozen altogether. In some the pustules lacked the pearlike, semi-globular appearance, and were ragged and poorly shaped. Again the vesicles did not by any means always reach the pustular stage. Some became scabs while others went on to pustules, and the shortening up of the papular, vesicular and pustular stages was noticeable in many cases.

In young children the lesions were in the majority of cases few; in fact in most of the cases, the condition resembled chickenpox much more than smallpox. This was possibly due to the fact that although unvaccinated themselves they had received some immunity through two or three generations of successfully vaccinated parents.

Unfortunately the prodromal symptoms in smallpox very closely resemble those of La Grippe, and in many cases physicians were called and the case diagnosed as grippe, and as soon as these symptoms subsided, did not make further visits, and therefore, did not see the eruption when it appeared. Many

of those in the poorer sections returned to work after the prodromal symptoms, and the rash appearing while they were engaged in their several vocations.

Then there was the difficulty to contend with of physicians making a diagnosis of chickenpox. They were in many cases unwilling to change their opinions even when a second case developed.

The exceedingly low mortality rate and the absence of such looked-for symptoms as marked depression, usually seen in the initial stage, and later the characteristic odor, and also the absence of the secondary rise in temperature in the pustular stage, together with the absence of pitting, and also the absence of confluent phases, constituted a very perplexing problem and one difficult to get anything like a reasonable consensus of opinion on, so far as the medical profession is concerned.

Relation of Vaccination.—With regards to the relation of this mild form of smallpox to vaccination, we tabulated several groups. In one group of 238 cases, 210 showed no evidence whatever of successful vaccination. In a larger group of 305 cases, 252 had never been successfully vaccinated. These percentages were also found to hold good for a larger group of 953 cases, and in groups one and two, only six had been vaccinated within ten years.

It is worthy of note that only one case of smallpox was found in the Jewish population of about 40,000, while the proportion in the Gentile population was one in every 754. The whole of the foreign population was comparatively free.

The incubation period in most of these cases averaged nearer 14 than 11 or 12 days. The presence of prodromal rash was comparatively rarer, and only half dozen cases came under the notice of the Department. These ranged from a slight erythema in some to an extensive measles-like eruption in others, appearing during the first 36 hours of the initial stage.

One interesting coincidence was seen by the diagnostician of the Department, in which a child, aged 7, had a typical attack of chickenpox, and while the scabs were still present, she developed smallpox, which she had contracted from her father who had just recovered from the disease.

There were in all some eight or ten cases

which reported a previous attack of smallpox. We are not able to corroborate these, however, all of them having occurred where statistics were not available, and only one showed any pitting.

The peculiar characteristic odor of the suppuration period was absent in the vast majority of cases.

Lesions on the mucous membrane of the nose and throat were not often found, except in a few of the more typical cases.

The constant appearance of the eruption on the palms of the hands and soles of the feet was felt to be of diagnostic value, owing to the rarity of lesions in these areas in chickenpox.

The presence of the prodromal symptoms to a greater or less degree, in the vast majority of cases, afforded probably the best guide in diagnosis.

Influence of Vaccination of Contracts in the Incubation Period.—Vaccination in the first week of the incubation period seemed to have a definite modifying effect on the course of the disease, while vaccination early in the second week in many cases gave us concurrent vaccination and smallpox, both running a fairly typical course. We had some 70 cases of this character.

We felt from our observations of these contacts that the period for immunity after vaccination had been done was variable, but two weeks was nearer correct than the shorter period which had been previously recognized. Two weeks seemed to be the minimum time required.

Diagnostic Difficulties.—It is a well known fact that chickenpox lesions which remain unruptured may ultimately become pustular. It is also true that smallpox pustules when partially ruptured will frequently assume an oval or irregular shape, making it difficult to distinguish from the unruptured lesion of chickenpox, which has become pustular.

Many of the cases presented at the same time papules, vesicles, pustules and crusts. The lesions were so scant in many that there were relatively as many or more on the body than on the face or extremities. In a well-marked case of chickenpox, the lesions occurring about the ankles and feet, wrists and hands, very frequently present, after full development, a picture of smallpox pustules. My diagnostician had ample opportunity to note this in the cases of chickenpox which de-

veloped in vaccinated children in the wards of the Isolation Hospital during the period of the epidemic.

He reports one case in particular, in which the child was removed from the diphtheria ward by the assistant, and isolated for chickenpox. It was the typical, oval, watery vesicle of chickenpox, and he did not consider it necessary to call the superintendent's attention particularly to the case. However, when my diagnostician examined the child, the lesions had scabbed on the body, and those about the ankles and wrists and a few on the soles of the feet presented a picture identical with that of smallpox in the pustular stage.

Another child had been exposed to this case, so we watched for developments. In due time this child developed a typical picture of chickenpox, and only then was my diagnostician satisfied that his assistant at the Isolation Hospital had made a correct diagnosis in the original case.

I might say that the Research Laboratories of the University of Toronto reported on the contents of the vesicles in these cases to be that of smallpox.

Varioloid smallpox, therefore, in the event of an epidemic, may present, especially in the distribution and appearance of an eruption which has not come under observation until several days after the onset, features which closely resemble the mature and unruptured lesions of chickenpox. In such a case, the presence or absence of a history of prodromal symptoms common to smallpox must, and we believe will, accurately determine the diagnosis.

The patient may not always complain of pain in the small of the back, but a history of headache, nausea, chills and general aching pains usually described by the patient as La Grippe, with the eruption appearing after recovering from these earlier symptoms, a matter of from three to five days, is quite sufficient to decide in favor of smallpox.

There were, however, a certain number of cases which were so typical that the taking of a history of prodromal symptoms was considered superfluous but in the case presenting a scant and variegated type of lesions, it is the only point left to fall back on.

Obviously it is always desirable to see the case at the beginning of the vesicular stage if possible. There is then the least possibility of error in diagnosis. The vesicle of chickenpox rapidly attains its full size, and is soft and

velvety to the touch, while the vesicle of smallpox, that is in its very early stage, is very small, pin-head in size and surrounded by a pink areola, almost as large as a five-cent piece. It is firm, almost hard, and when the finger is drawn across it with a little pressure, a scratching sensation is experienced. This is what is meant by the word "shotty" so frequently used in text books. In referring to this "shotty" sensation, they should always specify that they refer to "bird shot."

The earlier vesicular stage is the time when the patient has just recovered from the so-called La Grippe. His temperature is normal, the lesions are fresh, and have not been disfigured by scratching, and his memory of the prodromal symptoms is fresh and accurate. The patient with chickenpox at this stage is feverish, drowsy, and complains of aching pains. The lesions are so different that diagnosis is not difficult.

In the series of cases we encountered in Toronto, the great majority were free from scabs in from two to three weeks, and in many as early as a week or ten days, where the lesions proved abortive. Severity of eruption varied from a semi-confluent case down to a matter of one pock on the upper lip of a child in a family of five in which the three children were recovering from the disease and the parents were in the prodromal stage.

Our conclusions were that Toronto undoubtedly had an epidemic of an exceptionally mild type of smallpox, not chickenpox. Nor was it a hybrid disease. The typical full-blown pustular case was found in the same house as the mild case which presented diagnostic difficulties.

True, chickenpox existed in the city at the same time, but the emergency hospitals were retained for smallpox only. In these hospitals the well-marked cases were cared for in the same wards with the mild ones, without any cross infection. It was unquestionably smallpox in varying degrees of severity, with a greater percentage of the mild type. To call it a hybrid disease is, in our opinion, an effort to provide an excuse for errors in diagnosis. It may have been a source of consolation to some who had difficulties in diagnosis to hope that this was a hybrid disease, something that had never before been known to the medical profession, but there is no evidence to support such a theory.

There were in all more than 3,000 cases re-

ported to the Department, and I doubt not that there were quite that number of unreported cases so that we evidently had between 6,000 and 10,000 cases of this very mild type, which had distributed itself all over the city before it was recognized as smallpox, and in all these cases there was not one single death that we could attribute to the toxemia of smallpox. There were a few deaths from complications of bronchitis, broncho-pneumonia and pneumonia.

Laboratory Diagnosis of Smallpox.—It must be apparent that if we hope to avoid extensive outbreaks of this mild form of smallpox, we must be more painstaking in our diagnosis, and the diagnostician from the Department of Health in all cities should require to see all cases of so-called chickenpox occurring in the adult, in consultation with the attending physician. The possibilities of the laboratories helping out the diagnostician in the future, seem quite promising, as demonstrated by the valuable work done by Tieche of Switzerland and Force of the University of California. Tieche, while in charge of the smallpox hospital in 1907, noticed that applying vaccine and lymph from patients with smallpox or varioloid to his own arm, induced a re-action similar to Von Pirquet's tuberculin skin re-action. It was a small matter, therefore, for him to test on his own arm lymph suspected of smallpox or varioloid, inasmuch as the contents of a vesicle of variocella gave no re-action.

Tieche urges physicians to test their own skin in this way, and if it is in a condition of allergy, like his skin, he will thus have a simple method of control, which he always carries with him. In his ten years of experience with it, this test has proved conclusive in 98% of the cases.

He describes eleven cases in which the findings were most instructive and saved all concerned from annoyance of isolation for smallpox.

He points out also that the eruption of a smallpox group usually takes a centrifugal form, spreading to the extremities, while with chickenpox the location is more centripetal, being more pronounced on the abdomen, chest and face.

To overcome the objections and the possible danger of syphilis, taking the contents of the vesicles from patients, he always takes the

precaution to have it heated to a temperature of 70°C.

The details of these laboratory methods of intra-dermal injection of smallpox vesicle contents into a previously successfully vaccinated human or rabbit, and the results obtained, will no doubt very materially aid the diagnostician. Force has fully demonstrated that rabbits, sensitized by vaccination with vaccine virus, will give a marked intra-dermal reaction to smallpox vesicle contents in 24 to 48 hours, but will not give such re-action with chickenpox vesicle contents.

One difficulty that one sees in the way, so far as an early diagnosis is concerned, is the fact that we have to wait for the full formation of the vesicle in order to get the contents with which to test the case. However, in the border-line cases, it will always be a very decided and valuable aid, particularly in the control of these milder cases.

SMALLPOX IN DETROIT

September, 1920

Dr. Vaughan, Commissioner of Health for Detroit, reports the following as his experience:

1. During the first six months of 1920 there were reported 678 cases of smallpox and three deaths from this cause.

2. The disease is mild. Not more than a dozen cases have been of the confluent type.

3. Only one case, a young woman with previous history of Bright's disease, died as a direct result of the toxemia of smallpox. One death was that of a young infant, another an old person, in both of whom smallpox was only incidental as a cause of death.

4. The cases require about three weeks to clear.

5. Our difficulty is not with getting physicians to report, but in detecting cases who do not go to physicians. At least a dozen full-fledged cases have walked into the Department office for diagnosis.

6. There have been very few, less than a dozen cases of smallpox, previously diagnosed as chickenpox.

7. There have been a few mistakes among physicians who have called true cases of smallpox vaccinia, and in consequence people have been unnecessarily exposed.

8. The smallpox cases are among the unvaccinated. Of 482 cases studied from April 1 to June 30, 382 were never vaccinated in their lives. Forty-four were vaccinated more

than eight years prior to the disease, 21 of these with successful scars and 23 vaccinated without a take. Twenty-five cases have been vaccinated within 8 years but without a take. Thirty-one cases were vaccinated after exposure to the disease. In 8 of this number the vaccination was successful. In 23 there was no take.

9. It is the native-born white and colored who furnish the cases. There are relatively few cases among the foreign born.

10. Of the 482 cases from April through June, there are—

178 white males,
144 colored males,
142 white females,
18 colored females.

11. In proportion to population there are 10 times as many cases among colored as among white.

12. Among the white there are 25% of cases in children under ten years—

18% are from 10 to 19 years of age,
22% are from 20 to 29,
16% are from 30 to 39,
19% are over 39.

13. From December, 1919, to March, 1920, 29,535 persons entering Detroit from Canada were vaccinated, mostly without previous vaccination.

14. From April 28 to July 21, two vaccination squads, each consisting of a policeman and a Health Department physician and nurse worked nightly in the downtown districts, where smallpox was most prevalent. They examined 34,900 people, and of this number 6,930 were vaccinated. The balance were able to show satisfactory scars. Very few people refused vaccination. In the territory visited about 20% were considered unprotected against smallpox.

15. The spread of smallpox in Detroit is due:

First. To a recent large influx of unvaccinated newcomers, particularly colored people from the South.

Second. To the running at large of the unreported case.

Third. To the release of vaccinated exposures whose vaccination took place too late to avert the disease.

16. A nurse with automobile service is detailed to follow up every exposure for 21 days subsequent to vaccination to make cer-

tain of a take. In case of negative result the person is re-vaccinated.

17. It has been the custom for a Health Department physician to visit every adult case of chickenpox reported. At times of unusual smallpox prevalence, every case of chickenpox is checked by our diagnosticians.

BORDER QUARANTINE ON ACCOUNT SMALLPOX AGAINST PROVINCE OF ONTARIO

The United States Public Health Service established quarantine at the border, and advisedly so, in charge of Surgeon C. H. Gardner.

An epidemic of smallpox of extremely mild type prevailed in Toronto and elsewhere in the Province of Ontario, from January, 1919, until May, 1920. At the beginning of the epidemic the disease was probably either unrecognized or confused with chickenpox which was prevailing coincidentally in epidemic form. It was not until November that the character of the disease was officially recognized.

About the middle of that month the number of cases reported to the City Health Officer as smallpox amounted to 368. An officer of the Service was therefore detailed to investigate the situation in order to determine what measures should be adopted to prevent the introduction of the disease into the United States.

It was found that, while the disease was assuming startling proportions in the city of Toronto, in the Province of Ontario, the number of cases was quite small although scattered over the Province in all directions. Up to this time only seven deaths had occurred from complications arising out of this cause. Chickenpox had prevailed since January, 1919, more than 100 cases being reported monthly to the Health Department.

It was decided to establish inspection stations at all the crossing points and to require that all travelers from Toronto and other infected points who did not present satisfactory evidence of having had the disease should either present a certificate of recent successful vaccination or be vaccinated at the border. The coöperation of the Immigration Service was secured through the Commissioner at Montreal, and at the beginning of the work the lay inspection of travelers was done by Inspectors of the Immigration Service. The work was opened at 7 a. m., November 26, 1919, and was continued until March 19, 1920. Each station was in charge of an Acting

Assistant Surgeon, who either supervised the quarantine work in addition to his usual duties at the station or was a temporary Acting Assistant Surgeon employed for that duty. Vaccination of travelers was done by registered nurses, employed for that duty. Six principal inspection stations were opened; being located at Buffalo, N. Y.; Niagara Falls, N. Y.; Detroit, Mich.; Port Huron, Mich.; Sault Ste. Marie, Mich.; and Ogdensburg, N. Y.

The following personnel was employed for the work at the different stations:

	Nov. and Dec.			Jan.			Feb.			Mar.		
	A. A. Surgeons	Nurses	Inspectors	A. A. Surgeons	Nurses	Inspectors	A. A. Surgeons	Nurses	Inspectors	A. A. Surgeons	Nurses	Inspectors
Buffalo	1	5	4	1	6	7	1	6	6	1	6	7
Niagara Falls ..	1	5	6	1	5	6	1	5	6	1	5	6
Detroit	2	5*	3	2	7	3	2	7	3	2	7	3
Port Huron	1	4	2	1	3	4	1	4	3	1	4	3
Sault Ste. Marie	1	0	0	1	0	0	1	0	0	1	0	0
Ogdensburg	1	1	0	1	1	2	1	1	2	1	1	2

*1 matron.

The following table shows the number of persons vaccinated at the border inspection stations. It represents but a small part of the total numbers vaccinated as the Canadian authorities as well as private physicians vaccinated many thousands.

These figures, however, may be taken as an index of the tide of travel at the different points, in consideration of which it may be concluded that a protective measure was effectively carried out with but little inconvenience to the great mass of the traveling public and with a minimum of interference with commercial interests.

NUMBER OF VACCINATIONS AT BORDER STATIONS

	Nov. 27 to Dec. 1	Dec.	Jan.	Feb.	Mar.	Tots.
Buffalo	481	2 299	1,507	1,531	984	5,402
Black Rock Ferry Street M. H. Office						
Niagara Falls	449	2,429	2,175	1,220	520	6,793
Upper Bridge Lever Bridge Imm. Office						
Detroit	1,559	9,335	10,521	4,727	3,373	29,535
Windsor Ferry Walkerville Ferry Jos. Campeau M. C. Sta. Gd. Tr. St. Office						
Port Huron.	840	2,464	2,230	1,460	1,620	8,614
Ferry Tunnel Depot						

Sault Ste.						
Marie	844	376	259	119	1,598	
Ogdensburg.	6	265	234	189	137	979
Cape Vincent						
Morristown						
Hogansburg						
Nyando						
Clayton						
Cornwall						
Alexander Bay						

Louisville
Waddington
Nine Substations

Total52,921

CHARLES J. HASTINGS, M. D., *Chairman.*

C. H. GARDNER, M. D.

HENRY F. VAUGHAN, M. D.

LIST OF NEW MEMBERS

Proposed for Election to the

A. P. H. A.

May 1 to May 30, 1921, inclusive.

Names of Sponsors are set in **Bold Face Type.**

Names of New Members are set in Light Face Type.

MICHIGAN

W. C. Hirn, Lansing.

John A. Keho, M. D., Bay City.

MONTANA

Miss Wilma Felkner Haynes, Nurse, Forsyth.

NEW YORK

A. G. DuMez, Washington, D. C.

Charles Warren Hooper, M. D., Brooklyn.

OREGON

Frederick D. Stricker, M. D., Health Officer, Portland.

PENNSYLVANIA

Rev. A. Martel, Professor of Chemistry, Villanova.

Martin H. Kuntsen, State College.

Prof. Ray V. Watkins, Principal of State College, State College.

WISCONSIN

H. L. Wilson, M. D., Racine.

F. C. Morgenroth, M. D., Racine.

CANADA

A. J. Douglas, M. D., Winnipeg, Manitoba.

Arthur Rigby, Chief Food Inspector, Winnipeg, Manitoba.

ECUADOR

J. H. White, M. D., Washington, D. C.

Carlos V. Coello, M. D., Med. Officer, U. S. P. H. S., Guayaquil.

CONVENTIONS, CONFERENCES, MEETINGS

July 11-12, Northern Hotel, Billings, Mont., Montana Public Health Association.

July 12-13, Northern Hotel, Billings, Montana, Montana Association for the Prevention of Tuberculosis.

July 26-28, London, England, International Union Against Tuberculosis Conference.

July 28, Boston, Mass., Massachusetts Association of Boards of Health.

August 16, Rehoboth, Del., Delaware State Medical Society.

August 24-26, Duluth, Minn., Minnesota State Medical Association.

September 1-3, Colosseum, St. Louis, Mo., International Mine Rescue and First-Aid Meeting.

September 6-8, Pueblo, Colo., Colorado State Medical Society.

September 12-14, Hotel Deshler, Columbus, Ohio, Mississippi Valley Conference on Tuberculosis.

September 12-19, Hotel West Baden, West Baden Springs, Ind., American Hospital Association.

September 13-14, Hotel Utah, Salt Lake City, Utah, Utah State Medical Association.

September 13-15, Cornell University, Ithaca, N. Y., Annual Conference of Health Officers and Public Health Nurses of New York State.

September 13-16, Bridgeport, Conn., New England Water Works Association.

September 19-22, Seelbach Hotel, Louisville, Ky., Kentucky State Medical Association.

September 22-28, New York City, Second International Congress of Eugenics.

September 26-29, Montreal, Canada, Canadian Conference on Public Welfare.

September 26-30, Boston, Mass., National Safety Council.

November 14-18, New York City, American Public Health Association.

EMPLOYMENT BUREAU

HELP WANTED

Help wanted announcements will be carried free in this column until further notice. Copy goes to the printer on the 10th of each month for publication on the 20th. Mail to Boston office as early as possible.

In answering keyed advertisements, please mail replies separately to editorial office in Boston, Mass. In replying give age, professional training, salary requirements, previous positions held and three or more references.

Wanted: Beginning the first of September, Assistant Bacteriologist for Municipal Laboratory in a city of about 140,000 population. Must be familiar with microscopical diagnostic work, Wassermann Test, and technique involved in the analysis of milk and water. Salary \$1,200, with possibility of increase to the right person. Address Miss Marguerite Bond, Director of Laboratories, Department of Health, Bridgeport, Conn.

Wanted: For temporary position (four or five months), Assistant for routine laboratory work for examination of sputum for tubercle bacilli, cultures of diphtheria, smears for Gram-negative diplococci, Widal typhoid examinations and detection of albumin, sugar and casts in urine. Salary about \$100 a month. Address 448, M. L. F., care of this JOURNAL, Boston address.

Wanted: Laboratory Technician capable of doing ordinary city laboratory work, except Wassermanns. Salary \$1,500. Apply to Chairman, Board of Health, New Britain, Conn.

Wanted: An experienced bacteriologist to do teaching and experimental work in a large State College. Address 451, C. A. H., care of this JOURNAL, Boston address.

POSITIONS WANTED

Positions wanted announcements will henceforth be carried in this column. The charge is \$2 per insertion. Copy should be received at this office by the 10th of the month.

State Health Officer, holding A. B., M. D., Dr. P. H., from standard universities, and with six years' practical experience in public health work along broad lines, desires to make a change. Experience and references furnished. Address 159, S. F. H., care of this JOURNAL, Boston address.

Graduate Nurse, having had executive experience in public health work, wishes position requiring executive ability. Address 164, H. U., care of this JOURNAL, Boston address.

Trained public health man desires administrative position. Graduate of Mass. Inst. of Technology. Municipal health officer for 14 years. Full-time expert consultant for State Board of Health for 3 years. Address 160, W. H. C., care of this JOURNAL, Boston address.

A physician, experienced in city and county public health work, administrative and clinical, with a working knowledge of sanitary engineering, now a field agent, U. S. P. H. S., will be open for engagement as city or city-county health officer August 15 or sooner. Can furnish references from state and federal authorities. Engagement with organization co-operating with U. S. P. H. S. preferred. Address 158, D. J. N., care of this JOURNAL, Boston address.

Bacteriologist with experience in city, state and army technical and administrative work, desires position which will offer greater opportunities for the development of the administrative side of Public Health work than the present position which he holds. Address 162, S. N. R., care of this JOURNAL, Boston address.

Sanitary Chemist of extensive experience in city, state and military sanitation, and food, drug and water-supply control, desires a position of greater responsibility and opportunity. Address 161, E. A. U., care of this JOURNAL, Boston address.

Wanted: Position by laboratorian experienced in routine work, hematology, blood and urine chemistry and serology. Address 163, O. S. K., care of this JOURNAL, Boston address.

Wanted: By a trained and experienced sanitarian, full-time health work; holds Ph. G., M. D., Dr. P. H. degrees; county, state and municipal experience, including administrative and educational phases; best of references furnished; specially trained organizer. Address 165, W. L. H., care of this JOURNAL, Boston address.

Wanted: Position as director of laboratories, hospital, city or group. Thirteen years' experience, eight in hospital and clinic, five in public health laboratory, three of these as director of state laboratory. Graduate M. D., standard university; member A. M. A. Address 166, L. G. A., care of this JOURNAL, Boston address.

TRANSACTIONS OF THE CONFERENCE OF HEALTH OFFICERS AND FACULTY MEMBERS REGARDING PROBLEMS RELATING TO COUNTY HEALTH WORK.

Held at Johns Hopkins School of Hygiene and Public Health, Baltimore, Md., December 15 and 16, 1920.

A conference of health officers and faculty members regarding problems relating to county health work was held at the Johns Hopkins School of Hygiene and Public Health, Baltimore, Maryland, on December 15 and 16, 1920, at the invitation of the School of Hygiene and Public Health and the International Health Board. The following persons were present:

Representatives of the State Health Departments

Alabama: Dr. S. W. Welch, Dr. F. W. Dershimer.

Georgia: Dr. T. F. Abercrombie, Dr. M. F. Haygood.

Kansas: Dr. S. J. Crumbine, Dr. A. J. Warren, Dr. T. D. Tuttle.

Kentucky: Dr. A. T. McCormack, Dr. P. W. Covington.

Louisiana: Dr. Oscar Dowling.

Maryland: Dr. J. S. Fulton.

Mississippi: Dr. W. S. Leathers, Dr. P. G. Pope.

North Carolina: Dr. W. S. Rankin, Dr. K. E. Miller.

Ohio: Dr. A. W. Freeman.

South Carolina: Dr. J. A. Hayne, Dr. L. A. Riser.

Tennessee: Dr. Olin West, Dr. E. L. Bishop.

Texas: Dr. A. P. Harrison.

Virginia: Dr. E. G. Williams, Dr. R. K. Flannagan.

West Virginia: Dr. R. T. Davis, Dr. D. M. Lewis.

Representatives of United States Public Health Service

Surgeon-General Hugh Cumming.

Assistant Surgeons-General J. W. Scherschewsky and A. J. McLaughlin.

Surgeon L. L. Lumsden.

Representatives of Faculty of Johns Hop- kins School of Hygiene and Public Health

Dr. C. G. Bull Dr. R. W. Hegner

Dr. W. W. Cort Dr. W. H. Howell

Dr. W. H. Frost Dr. E. V. McCollum

Dr. J. S. Fulton Sir Arthur Newsholme

Dr. J. H. Gregory Dr. W. H. Welch

Representatives of International Health Board

Dr. J. A. Ferrell Dr. H. H. Howard

Dr. J. L. Hydrick

There were present also a number of visitors and students.

A number of topics relating to county health work were discussed in open meeting and a committee was appointed to prepare a report on each topic. The committee reports were then discussed, modified and adopted. They are brief, concise and practical and are here published for the information of readers of the JOURNAL.

REPORTS OF COMMITTEES

I. LEGISLATIVE AND ADMINISTRATIVE MA- CHINERY ESSENTIAL FOR COUNTY HEALTH ORGANIZATION

The county health district should include any city within its limits which has less than 10,000 population. Cities of 10,000 population or more may be included by mutual agreement.

The legislation creating county health districts should conform to the provisions of the state constitution and to important court decisions affecting it and should be in accord with the governmental habits and traditions of the people.

The fundamental purpose of the legislation should be to insure the appointment or

election of a properly qualified administrative health officer. This appointment or election may be by a board of health for the district, which board is elected or appointed by appropriate means; by an *ex-officio* board of county officers; or by the state health officer. Wherever suitable means can be devised for placing the responsibility for the election of the health officer upon local authorities, this course should be followed.

The health officer should hold office at the pleasure of the appointing agency, and should be required to furnish evidence of suitable training and experience. This evidence may be in the form of a license or

diploma issued by the state health authority after examination.

The health officer should be clothed with full power to enforce all sanitary laws and regulations, to make special orders and regulations for emergencies, and to take all steps necessary to prevent disease and to protect the public health. Orders and regulations of general application should be made by a local board of health or other duly qualified legislative body.

The health officer should be empowered to employ such assistants and to purchase such necessary equipment as available funds will permit, to dismiss employees, to formulate and put into effect a program of procedure for the district, and in general to perform all executive and administrative functions.

Funds for the support of the county or district health department should be provided on budget, and the usual machinery for levying taxes and for disbursement of funds should be employed. All expenditures should be audited as are other public funds.

Provision should be made by law for the receipt and deposit in the public treasury of funds contributed by voluntary agencies and these funds should be disbursed as are any other public funds.

The payment of state subsidy to local health districts should be contingent upon compliance on the part of the local district with the program of the state health authority.

The state health authority should be empowered to enforce compliance with minimum standards of organization and efficiency and to prescribe standard forms of records and reports.

A. W. FREEMAN,
K. E. MILLER,
J. A. HAYNE.

II. REPORT OF COMMITTEE ON PERSONNEL AND BUDGET NECESSARY FOR COUNTY HEALTH ORGANIZATION

The immediate organization of county health departments adequate to carry on a complete and efficient program of general preventive work is possible only in counties above the average in population and wealth.

In counties where a complete organization is not now possible, demonstration units under proper supervision, or a health

officer working alone may produce demonstrable and valuable results and such demonstrations and efforts should be encouraged in all counties.

Where the population and resources of a county are sufficient to provide a complete organization this should consist of the following personnel: a county health officer, a sanitary inspector, a public health nurse, a clerical assistant.

It is absolutely necessary that suitable and attractive offices be provided for the use of the County Health Department; these should be properly furnished, and equipped with adequate filing facilities. Also of great importance is the provision of means of travel for the three members of the staff who engage in field activities.

In the majority of the counties in the Southern States the above mentioned personnel usually directs its activities, in the main, at first, to the following:

1. Educational work.
2. Control of communicable diseases.
3. Control of soil pollution.
4. Child welfare work, including the medical inspection of school children.

In other sections of the United States where different conditions obtain, these activities may be varied to meet the situation.

Suggested Form of Budget

Salaries:

County health officer.....	\$ 3,000.00
Sanitary inspector	1,500.00
Nurse	1,200.00
Clerical assistant	900.00

Travel Expenses:

County health officer.....	800.00
Sanitary inspector	800.00
Nurse	800.00
Contingent fund	1,000.00

Total\$10,000.00

The county health officer, the sanitary inspector, and the nurse are expected to own the cars they use.

The above budget represents the minimum outlay for each budgetary item.

When public sentiment and available funds render possible other activities or more intensive work on any special line, additional personnel can best be added at the discretion of the county health officer

in the light of his knowledge of local conditions and needs.

The committee is of the opinion that all activities that may be helpful in creating sentiment for a full-time county health department, such as the employment of a whole-time county health officer or public health nurse, should be encouraged.

COMMITTEE ON PERSONNEL

DR. H. H. HOWARD DR. A. P. HARRISON
DR. L. A. RISER

COMMITTEE ON BUDGET

DR. OLIN WEST DR. P. W. COVINGTON
DR. P. G. POPE

COMMITTEE ON TOPICS AND COMMITTEES*

DR. W. S. LEATHERS DR. S. W. WELCH
DR. W. S. RANKIN

III. REPORT OF COMMITTEE ON PROGRAM FOR CONTROL OF COMMUNICABLE DISEASES

The practice in any county or any local jurisdiction must conform to state laws and regulations regarding the reporting and isolation of communicable diseases.

Reports of communicable diseases rendered in accordance with state laws and regulations should be made directly to the county health officer who should forward same to the state authorities. The original records of mortality in the county should be freely and conveniently accessible to the county health officer.

The county health officer should endeavor by every means possible to secure a prompt report of every case of reportable disease. Measures recommended to stimulate reporting are:

(a) Simplifying the reports required of physicians so that they will include only items which are essential and which are ordinarily known to the physician, namely: the diagnosis, name (of patient and householder), color, sex, age, address and date of onset of case.

(b) Assistance in diagnosis of doubtful and difficult cases by efficient laboratory service and by personal consultation when desired.

(c) Prompt and efficient action by the local health officer upon report of a case, thus demonstrating to physicians and householders the importance of such reports.

(d) A system of information through

schools to serve as a check on completeness of physicians' reports.

(e) Vigorous prosecution of physicians who persistently neglect or refuse to report cases as required by law.

Facilities for laboratory diagnosis should be such that specimens will be received in good condition and reports returned with sufficient promptness for administrative action. These purposes are ordinarily served by a central state laboratory with one or more branch laboratories according to facilities for transportation. For the diagnosis of diphtheria it may be advisable to utilize such municipal laboratories as may be in operation in the state. In general, establishment of a diagnostic laboratory in each county unit is not advisable in the present stage of development.

In connection with diagnostic laboratory service, the local health officer should be responsible for distributing supplies and containers to local physicians; and he should, if practicable, take release cultures.

The institution of proper control measures requires that each case of communicable disease be promptly visited by the health officer or a representative of the health organization, who is not only authorized to enforce police regulations but is thoroughly qualified to instruct the family in measures of prophylaxis. This ordinarily requires either a physician or a public health nurse.

The occurrence of a case of infectious disease affords to the health officer his best opportunity for educating the patient's family and associates in the prophylaxis not only of this particular disease but of communicable diseases in general; and the utilization of this opportunity by personal advices and distribution of literature is one of the most important features in the control of communicable diseases.

It is necessary in the control of communicable diseases to make a thorough epidemiological investigation of each case. While this will not in all cases lead to conclusions as to the source of infection, it will do so in a certain proportion of them, especially in rural communities, where the avenues of exposure are limited. The chief importance of such study is, however, that the results when carefully analyzed, enable the health officer to evaluate the various factors concerned in spreading infection as well as the efficiency of control measures; and the value of these

*The Committees on Personnel and Budget, after conference, concluded to make a joint report. The report as submitted was not entirely acceptable to the Conference, whereupon the two Committees were sent out to revise the report and membership of the Committee was enlarged by including the members of the Committee on Topics and Committees.

records is cumulative, increasing from year to year.

While it is not yet possible, and perhaps not desirable to "standardize" procedures in epidemiological case investigation, it is practicable and important to secure more general agreement as to the fundamental items and lines of inquiry so that observations made in different areas may be compared. It is recommended, in this connection, that at least those health officers who are in close personal touch, as, for instance, those working in the same state, should attempt to follow reasonably uniform methods.

The enforcement of regulations as to the reporting and isolation of cases of communicable diseases is only one of several lines of attack. An important function of the public health organization is to make such provision as may be necessary for effective treatment, especially by furnishing diphtheria antitoxin and other specific sera and vaccine, and by otherwise encouraging their use. There should also be a sustained effort to instruct the public, especially school children, in general measures of sanitation and to inculcate such habits of personal hygiene as may reasonably be supposed to minimize the danger of spreading infection.

W. H. FROST,
A. J. McLAUGHLIN,
T. D. TUTTLE.

IV. REPORT OF COMMITTEE ON FILTH-BORNE DISEASES

Your Committee understands that its duty is to propose methods rather than measures and therefore recommends the following necessarily brief outline:

1. A survey for the purpose of determining the present and past incidence of filth-borne diseases and to ascertain the sanitary status.

2. Having obtained this fundamentally essential information, the following procedure should be instituted:

- (a) Education with reference to modes of spread of disease and measures of prevention.

- (b) Presentation of facts ascertained by the survey.

- (c) Sanitation. By this general term we mean to include the safe disposal of human excreta and the provision of a safe drinking water and an uncontaminated food supply.

- (d) Typhoid vaccination.

We especially recommend for obvious reasons that the school be made the primary point

of attack in educational activities. We further recommend that the school be made the primary point of attack in sanitation for the reasons: (1) that a very considerable percentage of infection by intestinal parasites is the result of soil pollution at schools, and (2) that sanitation of schools provides a good object lesson for the community at large. The school should also be made the center for the administration of typhoid vaccine, since by reaching the school children the program reaches the age-period containing the highest percentage of typhoid non-immunes.

T. F. ABERCROMBIE,
E. L. BISHOP,
M. F. HAYGOOD,
A. J. WARREN.

V. REPORT OF COMMITTEE OF RESPIRATORY DISEASES

Your Committee considers the diseases in this group to be those whose principal lesion is in the upper or lower respiratory tracts, whose specific organism leaves the body briefly in the secretions of the mouth and nose, and which are characterized by coughing or sneezing.

These diseases are commonly spoken of as spray-borne and include such infections as bad colds, influenza, measles, whooping cough, tuberculosis and pneumonia.

In view of the great number of mild and unrecognized cases of these diseases, general measures for their control should be insisted on to prevent their transmission by means of excretions from the mouth and nose of infected persons. The inculcation of habits based on the following rules should be urged, particularly in our schools: Avoid common drinking cup. Don't put into the mouth fingers, pencils or other things that do not belong there. Whenever you cough or sneeze turn the head downward and cover the nose and mouth with your handkerchief.

Specific immunization by use of vaccines is recommended for whooping cough and pneumonia. There is difference of opinion as to the value of the prophylactic vaccines for colds and influenza, although it is believed that they do not do any harm.

Isolation of patients suffering from influenza, measles, whooping cough and pneumonia should be carried out. Those with whooping cough should not be confined to the house.

Concurrent disinfection of the secretion

from mouth and nose of patients with all these diseases is recommended.

Terminal disinfection of quarters used by these patients should consist of thorough cleaning and airing and the use of disinfectant solution. Fumigation is not recommended.

In view of the large part played by lowered resistance in infection with tuberculosis and pneumonia and to a less extent in the case of influenza and bad colds, special effort should be made by those likely to be exposed to these diseases to avoid conditions that are known to lower the bodily strength or resistance.

E. G. WILLIAMS,
J. S. FULTON.

VI. REPORT OF COMMITTEE ON DRINKING WATER

The committee on drinking water reports the following principles to guide county health officers:

Recognizing that safe drinking water is an absolute essential to continued good health, and that polluted drinking water is a most prolific source of disease, every health officer should, by all means in his power, endeavor to see that a safe water supply be within reach of every citizen within his jurisdiction, special emphasis being laid upon the water supply of schools and other places of public gathering.

A safe water supply is to be determined (1) by inspection from a sanitary standpoint and (2) by bacteriological and chemical findings. If the sanitary inspection report is unfavorable the bacteriological and chemical tests may be, and usually are, unnecessary. An open well or one with a leaky top is always unsafe. Such a well should be provided with a pump, a water-tight top (preferably concrete), and protection from seepage, the ground around the well being elevated above the surrounding ground.

An open spring is potentially unsafe and should be provided with a water-break which will prevent flood water getting into it. A trench above the spring may serve for this purpose. The spring should, if possible, be closed in and provided with a spout which would permit the securing of water without dipping into the spring.

Every health officer should inform himself as to the laws of his state regarding water supplies, and as to the rules and reg-

ulations of the State Board of Health on the subject. He should inform himself as to what the Sanitary Engineering Division of the State Board of Health can do to aid him in improving water supplies in his district and should enlist its service to the fullest extent.

He should inform himself also as to what the laboratory of the State Board of Health can do to help in his water problems. He should familiarize himself with the rules for collecting and shipping water samples for examination and should conform to these rules.

Every county health officer exercising jurisdiction over communities having public water supplies should, in coöperation with the state health authority, familiarize himself with such public supplies, use all diligence to secure the highest possible degree of safety for them, and arrange for regular and systematic laboratory examination and reports on each supply.

A. F. GREGORY,
R. K. FLANNAGAN,
A. W. FREEMAN.

VII. REPORT OF COMMITTEE ON FOOD AND NUTRITION: WITH ESPECIAL REFERENCE TO MILK SUPPLY

Any health program of a comprehensive nature must take into consideration education of the people in the importance of the proper selection of food as a factor in promoting well-being. Fortunately the results of modern research can be easily formulated in language which all can understand. The results of the experimental studies on animals, supplemented by such observations as those of Goldberger and Vœgtlin on the relation of the diet to pellagra leave no reason to doubt that the tendency toward deriving the diet almost wholly from cereal products (in great measure degerminated), fat pork and molasses, is one which contributes to lower the vitality and makes for inefficiency. The remedy for this condition, which is not confined to the South, is first:

The education of the public concerning the value of milk, and the need of the individual, adult as well as child, for a quart of milk a day.

Encouragement of the use of more greens and fruits in the diet. This should be definitely correlated with a plan of gar-

dening which would insure a supply of the necessary food articles in season.

Education of the public concerning the necessity of pasteurizing milk in order to render it safe.

The establishment of higher standards of cleanliness in the production and handling of milk.

Education concerning the necessity of the use of some fruit juice daily in the diet of an infant which is fed pasteurized milk, or milk which is otherwise heated.

E. V. MCCOLLUM,
D. M. LEWIS.

VIII. REPORT OF COMMITTEE ON MATERNITY AND CHILD HYGIENE

This committee emphasizes the importance of promoting in every state, as part of the official public health work of national, state and local public health authorities, work for the protection of maternal and child life.

The committee is of the opinion that additional action is urgently needed to secure complete birth registration throughout the country.

A complete program of work for the protection of maternal and child life should ensure adequate ante-natal, obstetric and post-natal advice and assistance for every lying-in woman. To this end:

(1) The instruction of medical students in maternity work should be extended and improved.

(2) Where midwives cannot be eliminated from practice, they should be strictly regulated and supervised, and subjected to examination as to competency.

(3) There is great need in most areas for additional institutional accommodation for lying-in women, the methods of provision to be determined by local circumstances.

(4) Health centers, where not already established, should be provided, having specially in view the institution of

(a) Antenatal consultations.

(b) Infant consultations and clinics.

(5) An adequate staff of public health nurses should be provided to secure regular home visitation of mothers and infants, to cover the ante-natal, infantile and pre-school periods.

(6) There should be active educational work for the promotion of personal hy-

giene with special reference to the hygiene of infancy and childhood.

The Committee favors a carefully devised system of Federal aid extension for promoting public health work, of which measures for the protection of maternal and child life should be an important part.

ARTHUR NEWSHOLME,
S. J. CRUMBINE,
J. W. SCHERESCHEWSKY.

IX. REPORT OF COMMITTEE ON PROGRAM FOR SCHOOL CHILDREN: CORRIGIBLE DEFECTS

A physical record card should be made out for each pupil upon his matriculation in school. This should follow him throughout his school life and should contain his complete physical history.

Systematic medical examination should be given to all school children, especially absentees, inviting neighborhood physicians to assist.

Parents or guardians should be confidentially notified of physical condition, with suggestion that child be sent to family physician or dentist.

In cases which have failed to have defects corrected intensive and individual follow-up work should be done by nurse, the health officer assisting in difficult cases.

Clinics should be established in health center or hospital, where there is one, for treatment of corrigible defects in indigent cases and cases referred by physicians. Such a clinic should be established with the cooperation of the County Medical Society, and, when possible, should be aided by the local Red Cross or other charity organizations. Clinics for conditions requiring services of a specialist should be held from time to time when necessary, such specialists to be provided by the State Board of Health or State Medical Association.

Where contagious diseases exist, and parents refuse correction or treatment, reference to juvenile court should be considered.

The Health Department should keep constant supervision over schools for detection and prevention of spread of communicable diseases. It should require a safe water supply, individual drinking cups and towels, sanitary privies of an approved type, proper ventilation, lighting and heating of school rooms.

Where organization of parent-teachers' associations or local health and welfare

leagues make them practicable, nutrition clinics, hot lunches, health chores, and other methods for training in health habits should be introduced.

The Health Department should coöperate with the County Board of Education and individual teachers for the purpose of providing an adequate course in physical education to the end that each child shall develop a health consciousness that will make him realize the value of individual good health and a health consciousness that will make him contribute to community health.

A. McCORMACK,
L. A. RISER,
P. G. POPE.

X. REPORT OF COMMITTEE ON VENEREAL DISEASES

Your Committee recognizes the importance of the question under consideration and cannot better express its convictions than by quoting a paragraph from a recent message of a Southern governor: "These (venereal) diseases are striking at the very foundation of our social system, and their control is the imperative call of the hour."

We know that venereal diseases are perhaps more thoroughly distributed throughout the country than any other communicable disease and that those suffering from these diseases are rarely properly treated, therefore, we believe the state, county and municipal authorities should acknowledge their obligations and coöperate in every way with the state and federal authorities and with other recognized agencies in the eradication of these diseases, and we recommend the following:

It is the responsibility of the State to provide:

- (1) The necessary legislation.
- (2) Ample funds for—
 - (a) Laboratory investigation and diagnosis.
 - (b) The treatment of the indigent and those confined in state institutions.
 - (c) Campaigns of education in the rural districts as well as in incorporated units.
 - (d) General supervision and expert assistance for municipal and county authorities.

It is the responsibility of the county and municipality:

(1) To coöperate with state and federal authorities.

(2) To enforce state and federal laws and regulations.

(3) To adopt, promulgate and enforce such additional legislation as may be deemed necessary.

(4) To provide institutional care for the delinquents who are venereally infected.

All states represented in this conference have laws, or regulations having the force and effect of laws, requiring venereal diseases to be reported. They have laws, also, for the compulsory examination and detention of persons reasonably suspected of being venereal disease carriers.

The task of curing venereal diseases is to be performed by the physician, but he must have the moral support of the laymen if these diseases are to be eliminated. When the public wants the work well done it will support and demand that all measures necessary for the control, cure and thorough elimination of venereal diseases be carried out.

The accomplishment of this task means education, re-education, enforcement of laws and expenditure of large sums of money under judicial direction of the health departments.

OSCAR DOWLING,
W. M. BRUNET.

XI. REPORT OF COMMITTEE ON EDUCATION AND PUBLICITY

In formulating policies and methods of education and publicity your Committee suggests that the following points should be considered:

1. Educational methods which seek to change the habits of a people are not likely to secure lasting results in a short time and therefore should be planned to operate over a period of many years.
2. The education of the following groups is essential:
 - (a) Practicing physicians—lectures and demonstrations to physicians only.
 - (b) Medical students—proper courses in medical departments.
 - (c) Student nurses—special public health work.
 - (d) School teachers—vacation courses.

(e) Normal school and college students—proper courses in curricula.

(f) School children—adequate courses in primary and secondary schools.

3. Before beginning work the following steps should be taken:

(a) A study of the disease incidence.

(b) A psychological study of the people.

(c) Formation of an educational program which will meet the problems disclosed by these surveys.

4. Experiments should be made to determine the value of the different methods of education. Consideration should be given to the possibility of adapting to public health education those methods of commercial advertising which have proved valuable.

5. In the evaluation of any method a discount should be made for the general improvement in the health of a community which would have occurred if no work had been undertaken.

6. There should be organized a central educational agency for the state which will coöperate with the county units. The service rendered the county will depend upon the amount appropriated by each.

7. The director of the central agency should be well qualified to plan and carry out both health programs and educational work.

8. The determination by the central agency of the health appropriations which could be used with advantage for educational work.

9. The education and re-education of health officers (at the expense of the state or county budgets) by attendance at conference, institutional courses and successful demonstrations.

F. W. DERSHIMER,
M. F. HAYGOOD,
J. L. HYDRICK.

XII. REPORT OF COMMITTEE ON PERSONAL HYGIENE

Personal hygiene may be understood as the application of the principles of physiology and pathology to the preservation of the normal health of the individual, and the formulation as far as possible of rules of right living in regard to such matters as cleanliness; physical exercise; the care of the eyes, of the teeth, and of the skin; the proper conditioning of the air and illumina-

tion in living rooms; and the avoidance of excesses in muscular and mental activity.

So far as sound knowledge in these matters can be taught to the public so far will the level of the general health be raised and the incidence of disease and invalidism be reduced.

Instruction in such matters should not be left to unofficial agencies or to private initiative since such efforts are sporadic and moreover frequently exhibit a tendency toward an unfortunate kind of propagandism. Systematic instruction in personal hygiene should constitute a feature of the general campaign of education in public health work and should be regarded as one of the essential duties of a county health officer.

The way in which such instruction may be given must vary with conditions, but it is suggested that there should be a maintained effort to establish courses of a simple character in the schools, to provide for home instruction and inspection through the public health nurse, and to disseminate general information by means of occasional lectures, exhibits, etc. It is also suggested that in view of the general lack of reliable information on such topics among the medical profession, an effort should be made to provide adequate courses of instruction in the medical schools.

W. H. HOWELL,
R. T. DAVIS.

XIII. REPORT OF COMMITTEE ON MEASUREMENT OF RESULTS IN PUBLIC HEALTH WORK

The only reliable basis for evaluating the results of public health work is that furnished by an accurate and complete system of vital statistics, including statistics of birth, deaths and morbidity. These statistics must cover a sufficiently long period of years and be supplemented by similar statistics for comparable units of population in other parts of the country.

The health officer should be in possession of all available information concerning the composition, character, habits and environment of his population. General information of this character may be obtained from the decennial census reports, but other available sources of information such as state and school censuses and local directories should be located and utilized. For many purposes these must be supplemented by more detailed data which can be secured

only by special sanitary surveys. These surveys may often be limited to representative groups of the population. Without this basic population data the statistics of morbidity and mortality are often without significance.

Accurate and complete reports of births and deaths are a minimum requirement and the individual detailed records of births and deaths should be fully and conveniently accessible to the county health officer.

Morbidity records should include not merely the bare reports of cases, but careful, detailed and uniform epidemiological data. These can be obtained only by personal investigation of the cases reported.

These facts afford a basis for measurement of public health work in a community, the reliability of the measurement being proportionate to the original accuracy, detail and extent of the data.

W. H. FROST.
K. E. MILLER.

XIV. REPORT OF COMMITTEE ON METHOD OF HANDLING FUNDS

Procedure in certain states: The coöperative health campaigns in Texas and some other states derive their funds from three sources as follows:

½ from the county	\$ 5,000.00
¼ from the state	2,500.00
¼ from the International Health Board	2,500.00
Total	\$10,000.00

All expenditures are made under the provisions of a definite budget, the items of the budget being so arranged that the above ratios are maintained in the expenditures.

The \$5,000.00 derived from the county remains in the county treasury and is expended under the laws and regulations which govern the expenditure of county funds for any purpose. Triplicate vouchers are used for each expenditure of the funds provided by the county, one voucher being sent to the state health officer, the remaining two being retained by the county auditor and county health officer respectively.

The fund derived from the state and from the International Health Board in equal proportion is deposited in the state treasury. This fund is expended under the laws and regulations which govern the expenditure

of state funds. Triplicate vouchers are also used in this case, one being sent to the state auditor, one to the state health officer and the third being retained by the county health officer.

At the end of the fiscal year unexpended balances of the money appropriated by the county are in the county treasury and must be reappropriated to apply on a new budget before they can be used in county health work.

Any unexpended balance remaining at the end of the year, of the fund derived from the state and the International Health Board is refunded to the state and International Health Board respectively in equal proportion.

It would seem that the triplicate voucher system would provide satisfactorily also for the expenditure of funds from any source, in which case one voucher would go to the source of the funds and one each of the two remaining vouchers be retained by the state and county health officers respectively. All vouchers must be approved by both the state and county health officers.

This system agrees in principle with that in use in the West Indies, with which section I am familiar and for which I am responsible. It has proven satisfactory in operation there and I am not in a position to recommend any change which would effect improvement.

Variations in the method outlined above are necessary to meet the different conditions encountered in the various states.

H. H. HOWARD.

NOTE.

In certain instances the United States Public Health service, the American Red Cross, the National Tuberculosis Association, the International Health Board, and other agencies coöperate with the states and counties in supporting county health budgets. The bases of coöperation vary widely. There is no uniformity with reference to the number of coöperating agencies or to the amount of their contributions. The funds furnished by the various agencies range from \$100 to \$2,500 per year.

JOHN A. FERRELL.

XV. REPORT OF COMMITTEE ON INCREASING THE SUPPLY OF COMPETENT COUNTY HEALTH OFFICERS

The Committee begs to submit the following report:

No time should be lost in endeavoring to secure adequate pecuniary compensation for county health officers and their staffs.

It is idle to expect that competent men and women, in sufficient numbers, will seek

to qualify themselves for such positions unless the financial rewards are more nearly commensurate with the educational and administrative qualifications which are demanded than is now generally the case.

The position of county health officer should be removed from the field of politics in order to secure such tenure of office and certainty of employment as will make the career of the public health officer comparable in this respect to any other professional career.

To attain these ends—better compensation and security of tenure—efforts should be made, particularly by significant demonstrations, to educate not only legislative and executive authorities, but also the general public, including the medical profession, to an appreciation of the benefits which a good county health organization can confer upon the community in the promotion of health, the prevention of disease and improved living and working conditions.

The most important contribution which voluntary organizations can make to the health movement is to aid by coöperation with the health authorities in this educational and demonstrative work in order to create a public sentiment demanding and supporting proper standards of official health organization and demonstration.

In order to secure a supply of competent health officers, now woefully lacking, to meet an ever-increasing demand, every effort should be made to bring to the attention of present and prospective members of the medical profession, especially hospital interns and other recent graduates, and above all medical students, the opportunities and attractions of a career in public health.

To this end, as well as for other reasons, it is urged that a department of hygiene or preventive medicine be established in every medical school where it can be properly supported, or failing this, a lectureship, not so much with the idea of adding a new burden to an already overweighed curriculum, as to ensure to all students at least some presentation of the scope and subject matter of sanitary science and public health work, to furnish more thorough elective courses in these subjects to those desiring them, and most important of all to serve as a haven to introduce throughout medical teaching, particularly in the clinics, the idea

of prevention as not less important than diagnosis and treatment.

In view of the long duration and considerable cost of the preliminary and professional education now required for entrance to the medical profession an urgent, immediate need would be partially met by the establishment by public spirited philanthropists of stipends, scholarships and fellowships to enable selected promising medical graduates to pursue for a year or more specialized training to fit them for public health work. The extension of such financial aid for further study and practical training to selected young health officers would serve an equally useful purpose.

There is great need of increased and improved educational opportunities for the special training of those desiring to devote themselves to public health work.

To meet the various needs it is desirable that there should be:

- (1) A few schools of hygiene and public health of a high order, connected with universities. These should have their own faculties and departments, where thorough instruction and opportunities for research should be provided.

- (2) Provision in many universities, medical schools, and engineering schools, of special courses designed to meet the needs of those preparing for public health work.

- (3) To meet local needs short practical courses conducted by state, and in some instances by municipal or other, departments of health, with the coöperation, where practicable, of medical school and universities.

To universities and medical schools which receive their support from the state, the health authorities may well make representations urging the establishment of courses in public health.

A most useful purpose would be served, especially for the practical training of county health officers, by the establishment of county health units so organized and conducted as to permit the reception of a certain number of workers to serve a kind of apprenticeship in the duties of a county health officer. Such demonstration centers in cities and counties would afford for the prospective health officer opportunities similar to those of a hospital internship for

a medical practitioner, and they are equally important.

Finally, your Committee urges that the health of the people is a matter of national concern, and it is difficult to see what argument can be advanced in support of the extension of Federal aid in the fields of education, of agriculture, and of stock raising, which does not apply with at least equal force to Federal aid to the states in the preservation of health, the control of

disease, and the saving of human lives. It is obvious that there are various ways in which the valuable aid already given by the Federal government through the Public Health Service in stimulating public health instruction and developing rural sanitation could be further extended in promoting objects covered by this report.

HUGH S. CUMMING,
WILLIAM H. WELCH,
J. W. SCHERESCHEWSKY.



PUBLIC HEALTH NOTES

Abstracts by D. GREENE, M. D., M. P. HORWOOD, Ph.D., JAMES A. TOBEY and HOMER N. CALVER.

International Conference on Child Welfare.—Such a conference is to be held in Brussels July 18-21, 1921, under the auspices of the Belgian Government, according to information received by the Children's Bureau of the U. S. Department of Labor.

American participation in the Conference is much desired by the Belgian Committee on Organization.

The object of the conference is the discussion of a series of questions dealing with the physical and moral welfare of children, and the rearing of infants. The discussion will proceed under four general heads, (1) Juvenile Delinquents and Juvenile Courts, (2) Abnormal Children, (3) Social Hygiene of Childhood, and (4) War Orphans. Foreign and Belgian experts will prepare reports on child welfare work in their own countries with special reference to the questions on the list. These reports will be printed and distributed in advance to all who join the conference.

It is hoped also to discuss at the conference the question of creating an international organization for child welfare. Steps were taken toward the formation of such an organization following the first International Conference of Child Welfare, in 1913, held also in Brussels, but the war prevented the carrying out of the plan.



Etiology of Acute Inflammation of Nose, Pharynx and Tonsils.—An exceedingly careful and scientific study of the etiology of inflammations of the upper respiratory tract has been made by Mudd, Grant and Goldman. A

number of factors or causes are held to be responsible for these infections. (1) The filterable virus of Kruse and Foster induces apparently a clinical entity, a type of acute coryza. According to experiments of its discoverers, this is of relatively high virulence and may cause infection practically independently of the action of exciting factors. (2) Various bacteria, including the pneumococcus, streptococci, *B. rhinitis*, Friedlander's bacillus, *B. influenza*, and possibly others seem to be capable of inducing infection of variable extent, duration and symptomatology. (3) Protein sensitization, the basis of vasomotor rhinitis and of true bronchial asthma, the underlying cause also of a relatively infrequent subgroup of acute recurrent "colds." (4) Various systemic diseases, drugs, mechanical and chemical irritants, chronic nasal affections and reflex neuroses. One factor by which resistance to bacterial infection may be lowered is excessive chilling. The authors' experiments have shown that chilling of the body surface causes reflex vasoconstriction and ischemia in the mucous membranes of the nasal cavity, post-nasal space and palate, oropharynx, nasopharynx and palatine tonsils. It seems not improbable that the ischemia may be the means of lowering local resistance. In other instances another mechanism is doubtless responsible for colds, that is, crowding in overheated places followed by emergence into a cold atmosphere. This view regarding ischemia as the means by which local resistance is lowered is in direct opposition to a theory widely current that congestion of the upper respiratory mucous membranes is responsible for the

local lowering of resistance.—S. Mudd, S. B. Grant and A. Goldman, *Jour. of Lab. and Clin. Med.*, Jan. Feb., and Mar., 1921.—(D. G.)

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Nursing in Spain, the Balkans and Poland.—Four hundred Russian nurses have been found among the refugees in Constantinople from the Crimea and are being organized into nursing units for service among the thousands of refugees. The nurses are being sent to the various refugee colonies and paid for their services. The first group was sent to the Balkan camps at Cattaro and Ragusa, where the immediate need for nurses was imperative. A small group is being held at Constantinople for emergency work.

To meet the need for nurses in Spain courses of instruction have been inaugurated there under the Spanish Red Cross. In addition to the courses offered in the capital, others have been organized at Toledo and Segovia. Civil and military authorities are evincing much interest in the movement to provide more nurses for hospitals which are understaffed.

Seven hundred Polish women have been awarded certificates after successfully passing examinations in home hygiene and nursing. The examinations were conducted at the various centers established throughout the country by the American Red Cross. In three months, 1,300 women have attended these courses and have taken a keen interest in the work. Health lectures are considered one of the most effective measures in the campaign against epidemic diseases which have swept Poland.—(J. A. T.)

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The World's Lepers.—The recent announcements in reference to the cure of leprosy with refined chaulmoogra oil have led to the compilation of interesting statistics. It is estimated that there are 3,000,000 lepers in the world today. Of these 2,000,000 are in China, 200,000 in India, and 20,000 in Japan. The United States has an important leper problem on her hands in Hawaii and the Philippines.—*Medical Record*, April 23, 1921. (J. A. T.)

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Malnutrition.—The notion that the children of the poor are necessarily the worst fed is combated, the authors asserting the greatest amount of malnutrition is to be found among families of the middle class of native birth. The foreigners as well as

the well-to-do show fewer evidences of under-feeding.—Alan Brown and G. Albert Davis, *Canadian Public Health Journal*, April, 1921. (M. B. D.)

†

Statistics of Syphilis and Third Revision of the International List of Causes of Death.—The third Conference for the Revision of the International list of Causes of Death held in Paris during October, 1920, decided that for the ensuing decade reports of deaths caused by complications or later stages of localized syphilis should be classified under titles for diseases of the various organs in which the syphilitic lesion is manifest. If American registration offices decide to adhere strictly to the requirements of the revised list, it will be necessary to classify under "diseases of the brain" every report of cerebral syphilis; under "cirrhosis of the liver" every report of syphilitic cirrhosis; and under "diseases of the respiratory system" fatal cases of syphilitic infection of the trachea, bronchi, or lungs.

For many years, all syphilis whether localized or not has been classified as syphilis. Under the new practice, it will not be possible to ascertain the total number of deaths reported as due to this disease unless registrars show separately for each of these scattered titles in the International List the number of syphilis deaths included. This scattering of syphilis entries over many titles of the International List will involve much labor for the registrar and for the person consulting the reports for material comparable with the statistics of total syphilis mortality in past years.

The decision of the International Conference on this point was made over the earnest protest of the American delegation, who had the support of the delegates of several other countries. If the Manual of the International List, based upon this third revision, is to be used by American registrars strictly in accordance with the practice prescribed therein, the total mortality from syphilis can be determined only if suitable sub-groups are arranged for the several titles receiving these new entries. It is much to be hoped that health officers and registrars will keep this requirement in mind and make possible a complete count of all the deaths due to syphilis that are reported to them.—*Statistical Bulletin XI*—2, Feb., 1921.

The Belgian Method of House Ventilation.—Professor Spehl has just published an important work, in connection with the campaign against tuberculosis, in which he emphasises the necessity of good ventilation in all dwelling places. It would seem to be an established fact that displacement of air in a vertical direction must be regarded as a defective arrangement. He urges that the Belgian system of natural, horizontal aeration—so-called differential aeration—should be generally adopted. This Belgian system was recommended before the war by M. Knapen and has already been made compulsory by the hygienic regulations of Paris. The Knapen method of ventilation provides for openings of varying size in the walls of the several sides of the building, whence the term “differential aeration.” These openings thus located at various points avoid harmful currents of air, for two reasons: in the first place, the openings do not penetrate the walls horizontally, but obliquely; that is, beginning on the exterior wall they incline upward as they approach the interior wall. The result is that the force of the air is broken, so that it does not fall on one in such “brutal” fashion. The air is tempered by striking the walls of the ventilating conduit before it enters the dwelling. Furthermore, the openings that admit the air from outside are not of the same size as the interior openings, as already stated. That is the main point. The currents of air that enter the rooms, instead of being sucked in through conduits of the same size throughout, are tempered by the fact that the exterior and the interior openings are of different dimensions and are located at different levels. Consequently, in place of a draught that is feared, a slight but constant mixing of the air is produced, by which means a regeneration of the whole atmosphere is brought about, as the fresh currents pass through from the north to the south or from the east to the west. Spehl claims that this Belgian system of differential horizontal ventilation is, at present, the best method of ventilating all classes of apartments, as it replaces automatically the foul dead air. Then, again, it has the great advantage that it does not bring quantities of dust into the apartments, as does the opening of windows and most ventilators.

This may be regarded as one of the outstanding features of the invention.—*Medical Officer*, Jan. 29, 1921, 47. (D. G.)



Anthrax From Shaving Brushes.—The British Ministry of Health has called attention to the recent occurrence of cases of anthrax. Infection has once more been traced to shaving brushes in spite of the steps taken to prevent the distribution of Japanese brushes imported before the prohibition order took effect. It is recommended that these brushes be returned to the wholesale dealer. For the further protection of the public the Ministry has indicated a method of disinfection of shaving brushes. The brush should be: (a) thoroughly washed with soap and warm water containing a little washing soda and then allowed to stand for half an hour in warm water containing a little soda; (b) placed in a warm solution of formaldehyde (1 part of 40% formalin and 16 parts of water—a 2½% solution of formaldehyde) for half an hour; (c) allowed to dry. It is, however, pointed out that complete sterilization of brushes is impracticable; the method mentioned above frees the exposed part of the hair from infection, but does not affect spores embedded in the handle of the brush. The following figures have been supplied by the Medical Inspector of Factories with regard to the results of various forms of treatment in 800 cases of cutaneous anthrax (excluding the erysipelatosus form) in Great Britain:

Treatment	Mortality		
	Cases	Deaths	percent
Serum only	200	8	4.0
Excision only	397	44	11.1
Excision and serum...	174	25	14.4
No special treatment..	29	14	48.3
<hr/>			
Total	800	91	11.4

It is also stated that in general the best treatment for a case of anthrax is physiological rest of the part affected, combined with intravenous injection of anti-anthrax serum; and that there is always difficulty in estimating the efficacy of different methods of treatment of a malady such as anthrax, which is capable of undergoing spontaneous cure.—*Lancet*, Feb. 5, 1921, 289. (D. G.)

STATE HEALTH NOTES— LEGISLATION

National. Congressional Procedure.—From report of National Health Council indicating action up to May 9, 1921.

The creation of a new Department, A Federal Department of Public Welfare, to be brought about by the reorganization of numerous existing governmental functions, is specifically requested by the President in his message to Congress. His policy regarding the proposed Department will be advanced in Congress under selected leadership. Brigadier General Charles E. Sawyer, the President's physician, has been specially authorized by the President to formulate detailed plans on the subject. These plans were presented, in part, to the Senate Committee on Education and Labor at a hearing held on April 21st. General Sawyer told the Committee that the plans, drawn up after study and investigation, embody the outline which, broadly speaking, creates the following divisions to be under the Secretary of Public Welfare and four assistant secretaries:

Education.—To embrace all duties pertaining to the education of the maimed and crippled; coöperation with the states in vocational training, physical education, etc., and all educational work now conducted in the various departments of the Government.

Public Health.—All duties given by statute to the Public Health Service, including research, quarantine, sanitation, hospitalization and special health activities now in many government departments.

Social Service.—All duties of this character now performed by numerous departments, including social hygiene, special work for women and children, employee's compensation, employment services, etc.

Veteran Service Administration.—Duty of considering all matters relating to compensation, insurance, allotments, personnel and equipment, vocational training, etc.—pertaining to the rehabilitation of ex-service men.

The above proposed functions of the new Department, outlined by General Sawyer, apparently met with the approval of all members of the Committee on Education who were present. Senator Kenyon, Chairman of the Committee, is to confer further with Dr. Sawyer for the purpose of drafting

a bill which will set out the President's plans. It was urged that the Bureau of Efficiency prepare figures to show what saving of money will be accomplished by this new department, presumably an important element in accomplishing the passage of the bill in Senate and House.

The National Health Council is working in close coöperation with Dr. Sawyer on the health aspects of this plan.

War Risk Insurance Bureau and Public Health Service.—The first actual consolidation of governmental bureaus under the new administration has been made by Secretary of the Treasury Mellon. This was done by an order directing the Bureau of War Risk Insurance to take over from the Public Health Service the greater portion of the work of treating and caring for disabled veterans of the World War. Each of these bureaus is in the Treasury Department. The Bureau is to take over work, offices and personnel of the Service connected with the medical treatment of disabled war veterans, with the exception of the operation of hospitals and dispensaries. The Bureau will take over the work of finding suitable hospital beds and the contracts with private institutions. It will establish an adequate force of medical inspectors to insure proper treatment of patients, wherever they may be placed. The Bureau is to send patients to P. H. Service Hospitals, National Soldiers' homes or hospitals operated by the Army or Navy, and to private institutions.

BILLS RELATING TO REORGANIZATION OF THE FEDERAL GOVERNMENT

S. 408. Establishment of Department of Social Welfare. Introduced by Mr. Kenyon April 12, 1921. Referred to the Committee on Education and Labor. The bill provides for the addition of a new executive department to the government known as the Department of Social Welfare with a cabinet officer and an assistant secretary. It transfers from the Department of Treasury the Public Health Service and the Hygienic Laboratory; from the Department of Interior the Bureau of Education; from the Department of Labor the Children's Bureau, the Bureau of Industrial Housing and Transportation, and the U. S. Employment Service; and from the Department of Agriculture the Office of Home Economics of

the States Relations Service. The U. S. Employees' Compensation Commission, which is now an independent body, is also taken over by the proposed department.

H. R. 7. Establishment of Department of Education. Introduced by Mr. Towner, April 11, 1921. Referred to Committee on Education. This is the Smith-Towner Bill, providing for the establishment of a Department of Education. The bill has not yet been introduced in the Senate at this session of Congress. The proposed new department will undertake research in illiteracy, immigrant education, public school education, including health education, recreation and sanitation; preparation and supply of competent teachers for public schools, higher education and in such other fields as may require attention. About \$85,000,000 are appropriated, \$20,000,000 being for physical education and instruction in principles of health and sanitation, which is to be used for aiding the states, but each state aided must match the appropriation of the Government from its own funds.

The bill authorizes the transfer of the Bureau of Education and such other offices, bureaus, divisions, boards, or branches of the government as Congress may determine.

S. 526. Establishment of Department of Health. Introduced by Mr. Owen, April 12, 1921. Referred to Committee on Appropriations. This measure has been introduced in Congress at regular sessions for the last ten years. It contemplates the establishment of a new executive department known as the Department of Health. It provides for a head of the department known as the Secretary of Health and all the health activities of the government shall be transferred to his jurisdiction. An assistant Secretary of Health, who shall be a skilled sanitarian, is also designated.

H. R. 3. Establishment of a Veterans' Bureau. Introduced by Mr. Sweet, April 11, 1921. Referred to Committee on Interstate and Foreign Commerce. The measure provides for the establishment of a Veterans' Bureau in the Treasury Department to supplant the Bureau of War Risk Insurance, the Vocational Education Bureau, and the hospitalization work of former disabled service men now being conducted by the U. S. Public Health Service.

A director at a salary of \$10,000 per year

is designated and he is given a medical staff and other necessary employes to conduct the work and duties pertaining to the care of former service men.

S. 1607. H. R. 5837. Department of Public Welfare. Introduced in the Senate by Mr. Kenyon and in the House by Mr. Fess. Referred to Committee on Education and Labor in the Senate and the Committee on Education in the House.

There is proposed a new cabinet department with a secretary at \$12,000 a year and four assistant secretaries at \$5,000 a year each, who shall each be in charge of one of the following divisions: 1. Education; 2. Public Health; 3. Social Service; 4. Veteran Service.

The following existing offices are abolished and their powers and duties transferred to the new department:—

Director, Bureau of War Risk Insurance.
Surgeon General, Public Health Service.
Commissioner of Education.

Chief, Assistant Chief, and Private Secretary to the Chief, Children's Bureau.

Federal Board for Vocational Education.
Board of Managers, National Home for Disabled Volunteer Soldiers.

The following bureaus are transferred to the new department:—

Children's Bureau (Labor).

Bureau of War Risk Insurance (Treasury).

Public Health Service (Treasury).

Office of Education (Interior).

Bureau of Pensions (Interior).

Freedmen's Hospital.

National Home for Disabled Volunteer Soldiers.

U. S. Employee's Compensation Commission (number of commissioners reduced to one).

Columb'a Institution for the Deaf (Interior) functions.

Howard University (Interior) functions.

St. Elizabeth's Hospital (Interior) functions.

The Secretary of Public Welfare may allocate the functions of the various bureaus within the proposed department.

S. Joint Res. 30. Additional Member on the Smoot-Reavis Committee. Introduced by Mr. Smoot. Senate and House have passed a joint resolution authorizing the President to appoint a representative to act for the executive on the Joint Committee

on Reorganization. The President has appointed Mr. Walter Brown of Toledo, Ohio. This is the Smoot-Reavis Committee and the additional member is selected at the request of the President. It is not definitely known to what extent this reorganization committee will act. No hearings have as yet been held.

BILLS RELATING TO EXTENSION OF HEALTH FUNCTIONS OF THE GOVERNMENT

S. 1039. Protection of Maternity and Infancy (Sheppard-Towner Amendment). Introduced by Senator Moses of New Hampshire, April 28, 1921. Referred to the Committee on Education and Labor. This is an amendment to the so-called Sheppard-Towner bill, which is now before Congress, having been re-introduced at the present session by Senator Sheppard. It is a complete substitute for the Sheppard-Towner measure, providing for coöperation between the Federal Government and the county governments, instead of between the Federal Government and the state governments. The Moses plan, as outlined in this amendment, extends to any county government in the country the option of providing \$5,000 for the equipping of a county hospital, the Federal Government to furnish a similar amount. A sum of \$5,000 shall be provided annually both by the Federal and county governments for the maintenance of such hospitals. Care of maternity cases and treatment of children shall be given preference in these hospitals. Courses in elementary nursing training of one year's duration would be given in these hospitals. The proposed coöperation with the state governments as outlined in the Sheppard-Towner bill is eliminated altogether.

The bill appropriates \$10,000 for the administration of the Act, under the direction of the Surgeon General of the Public Health Service.

The President is given the power to transfer to the new department in addition to the above any other educational, health or social welfare activity of any branch of the government. Any controversy as to relative functions of the new department and any other are also to be decided by the President.

Mr. Courtenay Dinwiddie, who has followed the proceedings closely gives these notes of the hearing of May 5, 1921, before

the Senate Committee on Education and Labor.

"Opponents of the Bill heard by the Committee were in charge of Miss Kilbreth of the National League Opposed to Woman Suffrage. They included representatives of the Medical Liberty Group, a spokesman of the physicians of Fitchburg, Mass., and one or two individuals. The arguments were closely similar to those at previous hearings. The advocates were Dr. S. Josephine Baker, Dr. R. A. Bolt, Dr. Ellen C. Potter, and Dr. Florence L. McKay.

"Questions by the Committee were frequent and indicated a general friendly attitude, except that Senator Phipps of Colorado suspected there might be danger of propaganda for birth control if the bill passed."

H. R. 22. The Promotion of Physical Education. Introduced by Mr. Fess, April 11, 1921. Referred to the Committee on Education. This measure provides for the promotion of physical education in the United States, through coöperation with the states, in the preparation and payment of supervisors and teachers in physical education, including health supervisors and school nurses. The sum of \$10,000,000 is appropriated for the fiscal year ending June 30, 1922; and for each subsequent year an amount sufficient to allot \$1 per child of school age to each state accepting the provisions of the act. Each state must designate an authority who shall organize the physical education work to meet the needs of all the children of the state from six to 18 years of age. An additional sum of \$300,000 is appropriated for payment of salaries in the District of Columbia; and \$200,000 is allowed to the U. S. Public Health Service for carrying out certain coöperative, research and demonstration phases of the work. The Bureau of Education of the Department of Interior is to establish a Division of Physical Education to administer the act. The same bill was introduced in the Senate by Senator Capper of Kansas. The number of the Senate bill is Senate 416.

H. R. 2287. The Extension of Vocational Rehabilitation, to ex-service men. Introduced by Mr. Rogers, April 11, 1921. Referred to Committee on Education. This bill makes the terms of the existing Federal law on the subject of Vocational Rehabilita-

tion of Disabled Persons, discharged from military and naval forces, more liberal, extending the benefits of vocational training where the earning capacity of the former service men have been impaired to the extent of at least 10 percent.

H. R. 19. Extension of Vocational Training to Widows of ex-service men. Introduced by Mr. Newton, April 11, 1921. Referred to the Committee on Education.

This is an amendment to the Vocational Training Act which extends the vocational training to the widow and child of a disabled service man, who has died as a result of injuries or wounds incurred in the war. It fixes the limit to be paid to any such person \$100 per month for single persons without dependents and \$120 per month for persons with dependents. No child shall be paid more than \$50 per month.

H. R. 21. The Advancement of Vocational Education in Civil Population. Introduced by Mr. Fess, April 11, 1921. Referred to the Committee on Education. The measure provides a federal appropriation to coöperate with the various states in the promotion of vocational education in agriculture and trades and industries, and for the preparation of teachers of vocational subjects. The sum of \$500,000 is appropriated for the fiscal year ending June 30, 1922, and for each subsequent year for nine years an amount equal to the amount appropriated for the preceding year, plus \$250,000. For the fiscal year ending June 30, 1931, \$3,000,000 is appropriated and annually thereafter. Each state in order to secure the benefits of this act must organize a State Board of Vocational Education and prepare plans for carrying out the education, these plans to be submitted to the Federal Board of Vocational Training.

S. 525. Establishment of a Sanitary Corps for the Public Health Service. Introduced by Mr. Owen, April 12, 1921. This bill proposes a Reserve Corps for duty in the Public Health Service in time of national emergency. It authorizes the President to appoint and commission such officers, who shall be sanitarians.

BILLS RELATING TO OTHER MEDICAL, HOSPITAL AND PUBLIC HEALTH MATTERS

H. R. 116. Issuance of Doctor's Licenses to Practice in All States of the Union. In-

troduced by Mr. Mason, April 11, 1921. Referred to the Committee on Interstate and Foreign Commerce. The bill gives the Secretary of the Interior the authority to issue to doctors of medicine licenses to practice medicine in the states of the Union without discrimination between states. Any physician, according to this bill, who has become a practicing doctor in any state of the Union and has a license duly issued by the licensing power of that state may apply to the Secretary of Interior and secure for the sum of \$10 a license giving him the right to practice in every state.

S. 206. Prohibition of Exportation of Opium. Introduced by Senator Jones of Washington. This measure is an amendment to the existing law prohibiting the importation of opium into the United States, and it provides against the exportation of any opium, cocaine or salt derivative, to any country except under certain restrictions. It passed the House at the last session. A similar bill has also been introduced in the House by Mr. Miller of Washington. It is H. R. 2193.

H. R. 65. Prohibits Transportation of Poisons Without Label. Introduced by Mr. French, April 11, 1921. Referred to the Committee on Interstate and Foreign Commerce. The bill is an amendment to the Pure Food and Drug Act which provides that the shipment of any poison direct to a consumer from one state to another without being placed in a container bearing the word "poison" and without containing a label giving at least one suitable antidote shall be a violation of the act, punishable by the penalties already fixed.

H. R. 4109. Destruction of animals affected with rabies. Introduced by Mr. Baker, April 18, 1921. Referred to the Committee on Appropriations. The measure appropriates the sum of \$200,000 to the Secretary of Agriculture to be used for the destruction of coyotes, California lions, cougars, wildcats and all other wild animals which suffer with rabies or other dangerous animal diseases.

H. R. 4104. Free Distribution of Antirabic Virus. Introduced by Mr. Baker, April 18, 1921. Referred to the Committee on Appropriations. The bill gives the sum of \$25,000 to the Bureau of Public Health Service for the distribution free of cost of

antirabic virus to be used in the treatment of persons exposed to rabies.

S. 802. Incorporation of American Society for the Control of Cancer. Introduced by Mr. Wadsworth, April 13, 1921. Referred to the Committee on the Judiciary. This bill provides for the incorporation of the American Society for the Control of Cancer, which is pledged not to engage in any business for gain.

H. R. 5033. Prescriptions of liquor for medicinal purposes. Introduced by Mr. Volstead, April 25, 1921. Referred to the Committee on the Judiciary. This is a measure supplementing the National Prohibition Act. It eliminates the sale of beer on a physician's prescription. By a recent decision of former Attorney General Palmer, the distribution of a bottle of beer per day to patients by doctors holding permits from the Prohibition Commissioner was legalized. This proposed act annuls the Attorney General's ruling. Prescribing wine is still permitted. Another feature of the bill is a provision giving the Prohibition Commissioner the right to cancel, suspend or revoke licenses of physicians who fail to observe the law in prescribing spirituous or vinous liquors. In this case notice is served upon the offender and he is given thirty days to show reason why the license should not be cancelled. Among other measures of a similar nature to be passed on by the Committee is the bill which transfers actual enforcement of prohibition from the Treasury Department to the Department of Justice.

H. R. 5346. Bureau of Citizenship (health instructions for aliens). Introduced by Mr. Johnson of Washington, April 27, 1921. Referred to Committee on Immigration and Naturalization. The name of the Bureau of Naturalization of the Department of Labor is changed by this measure to the Bureau of Citizenship with the creation of a head official entitled "Director of Citizenship." Complete control, registration and education of the alien population of the United States, including all questions connected with their naturalization, are invested in this Bureau of Citizenship. The Director is authorized to promote in the states, among other things, instruction in physical education, health and sanitation, for foreign-born and native illiterates.

S. J. 46. Investigates health of former soldiers. Introduced by Senator Robinson

of Arkansas, May 2, 1921. Referred to the Committee on Military Affairs. This resolution provides for the establishment of a commission composed of three members of the Senate and three members of the House, whose duty it shall be to investigate conditions respecting the health, hospitalization, compensation and employment of former service men. The commission at the end of three months shall report to Congress the results of its investigations with recommendation for remedial legislation.

H. R. 5764. Extends authority for expending money on war risk hospitals. Introduced by Mr. Landley of Kentucky, May 4, 1921. Referred to the Committee on Public Buildings and Grounds. The purpose of this proposed amendment to the act passed at the last session of Congress authorizing the expenditure of \$18,600,000, is to give the Secretary of the Treasury additional discretion in the use of this money in equipping or remodeling hospitals belonging to the Army and Navy and also national homes for disabled volunteer soldiers now being used for the care of former disabled war veterans.

H. R. 5617. To establish a bureau for study of criminal, pauper and defective classes. Introduced by Mr. Walsh, May 2, 1921. Referred to Committee on the Judiciary. This bill proposed in the Department of the Interior a bureau for the study of abnormal classes, especially such as may be found in institutions for criminal, pauper and defective groups.

Eighteen other bills were introduced into Congress by May 9, 1921, which are indirectly connected with health administration. These relate to hospitals and hospital construction, compensation and bonuses, reimbursements, vocational rehabilitation, prevention of fires in industrial plants, hoarding of foods, and one, H. R. 4136, requires the words "Goat meat," to be stamped on the carcasses of goats.

Interdepartmental Social Hygiene Board.—The last Congress, in its session closing March 4, 1921, made no appropriation for continuing this Board. Since the adjournment of Congress the Surgeons General of the Army, Navy and Public Health Service have met and agreed that the Board should ask the present Congress for an appropriation of \$925,000. This money, if

appropriated, is to be devoted to five general purposes: 1. \$500,000 for allotment to state boards of health in accordance with the provisions of the Chamberlain-Kahn act. 2. \$250,000 for assisting the states in protecting the military and naval forces of the United States against venereal diseases. 3. \$50,000 for medical research with reference to treatment and control of venereal diseases. 4. \$25,000 for administrative expenses. 5. \$100,000 for developing better anti-venereal disease education. Items 2, 4 and 5 are to be under the control of the Board with reference to administration and disbursements, and 1 and 3 by the Public Health Service.

The organization of the Board under the new administration has resulted in Major General Merritt W. Ireland being elected chairman, and in the three Surgeons General actively serving on the Board as representatives of the three Secretaries.



National. National Health Council Report of Congressional procedure brought down to May 10, 1921.

H. R. 6263. Expenditures for Hospitalization. Introduced by Mr. Langley of Kentucky May 16, 1921. Favorably reported by the Committee on Public Buildings and Grounds.

This measure amends the act passed by the last session of Congress appropriating \$18,600,000 for the construction of new hospitals for the government and the building of additional extensions to present institutions owned by the government. In the original act it was specified that of this sum \$6,100,000 was to be used in remodeling and extending existing institutions. This bill, in the form of an amendment, eliminates such restriction and gives the Secretary of Treasury authority to expend the entire amount either for new hospitals or for the construction of additions to old hospitals. It was deemed of such importance that the Committee on Public Buildings and Grounds met the day following the introduction of the measure by Mr. Langley and, acting promptly, reported it favorably to the House, asking for immediate passage.

S. 1839. New measure for creation of Department of Public Welfare. Introduced by Senator McCormick of Illinois May 18, 1921. Referred to the Committee on Education and Labor.

This is the first of a series of bills to be

introduced into Congress for the reorganization of the Federal government by Senator McCormick of Illinois, who has made an exhaustive study of this subject. The measure is quite similar to the Fess-Kenyon bill for a Public Welfare Department except that it provides for the transfer of additional bureaus and commissions from other departments. In the McCormick measure there is a cabinet member at \$12,000 a year and three assistant secretaries at \$7,500 a year, who have charge of the various functions and operations of the public health and welfare activities. The bureaus, offices and branches of service to be included in the Department of Welfare as prescribed in this bill with the Departments from which transferred are as follows:

(a) From the Department of the Interior—Office of Indian Affairs, United States Indian Service, Bureau of Pensions, Bureau of Education, St. Elizabeth's Hospital, Howard University, and Freedmen's Hospital. The Board of Indian Commissioners is abolished.

(b) From the Department of the Treasury—Bureau of War Risk Insurance, Office of the Surgeon General, Public Health Service, the collection of vital statistics would be under the direction of the Public Health Service. The United States Employes Compensation, the Federal Board of Vocational Education, the United States Interdepartmental Social Hygiene Board, the National Home for Disabled Volunteer Soldiers, the Columbia Institution for the Deaf are all abolished as separate institutions and their functions are transferred to the new Department of Public Welfare. The Secretary is authorized to reorganize branches of services within the proposed Department.

H. R. 6300. Deficiency Bill. Reported without amendment on May 18, 1921.

The Deficiency Bill for the fiscal year ending June 30, 1921, contains the following items of interest to public health workers:

Federal Board for Vocational Education	\$15,000,000
Medical and Hospital Services, Bureau of War Risk Insurance.....	8,710,272
Prevention of Epidemics, Public Health Service	309,000
Expenses for eradication of tuberculosis in animals, Bureau of Animal Industry	405,000

H. R. 6215. Amendment to Pure Food and Drug Act. Introduced by Mr. Voight of Wis-

consin, May 13, 1921. Referred to the Committee on Agriculture.

This is an amendment to the Pure Food and Drug Act, which is designed to put an end to the manufacture, sale, or transportation of adulterated milk. It applies particularly to any kind of milk or cream, whether evaporated or condensed, which has been blended with fats or oils other than milk fats.

S. 1607. Fess-Kenyon bill for a Department of Public Welfare. The joint hearings have officially closed. They were held on May 11, 12, 13, 18 and 20. Thirty-seven witnesses were heard.

Brigadier General C. E. Sawyer explained the bill and stated that the plan had the endorsement of the President. Surgeon General Cumming explained the scope of the office of the Surgeon General and requested that it be retained. He seemed to acquiesce in the bill excepting for the clause abolishing the office of Surgeon General. Dr. W. H. Welch of Johns Hopkins, favored the bill. He stated that while departments of education and health are desirable, they may be combined. Dr. Edward Martin, Health Commissioner of Pennsylvania, seemed to agree with Dr. Welch. An entire session was taken up by representatives of educational interests, who in general were not opposed to a Department of Public Welfare, but did not wish education submerged in it. Representatives of the N. E. A., Columbia University, American Council of Education, National Congress of Mothers and Parent Teachers, International Sunday School Association and other organizations were heard supporting this view. Other speakers advocated various changes and a number of individuals, chiropractors, representatives of citizens protective associations and American medical leagues opposed it.

Delaware.—The recent Legislature increased the appropriation for diphtheria antitoxin from \$500 to \$5,000, so that diphtheria antitoxin, the Schick test and toxin antitoxin are now free to all applicants. It also made an appropriation to pay the salary and expenses of a supervising nurse for instructing midwives.



District of Columbia.—Information furnished by the National Health Council. The legal management and appropriations of the District are vested in Congress.

S. 810. To regulate practice of Medicine in District of Columbia. Introduced by Mr.

Cummins April 13, 1921. Referred to the Committee on the District of Columbia.

The bill is an amendment to the act already in existence regulating the practice of medicine and surgery in the District. It provides that persons who apply for licenses must give satisfactory evidence that they have studied medicine or surgery in a medical college authorized by law to confer such a degree, or under a preceptor authorized to practice medicine and surgery for not less than three years prior to the issue of the diploma. The former act did not contain these provisions.

H. R. 4118. Prevention of Venereal Disease in District of Columbia. Introduced by Mr. Baker April 18, 1921. Referred to the Committee on the District. The bill compels all physicians, dentists, nurses, midwives and other persons who professionally attend to file a written report with the Health Board, of all cases of syphilis, gonorrhea, or chancroid that come under their notice. It also provides a penalty for any patient suffering with venereal disease who fails to carry out the instructions of his physician to prevent the spread of the disease. Every person, under penalty, is also compelled under the law to report to the Health authorities within three days after becoming aware of the existence of the disease.

S. 749. Regulation of practice of osteopathy in District of Columbia. Introduced by Mr. Capper April 13, 1921. Referred to the Committee of the District. This proposed act creates a Board of Osteopathy Examiners of the District of Columbia composed of five members who shall have the power to issue licenses and regulate the practice of osteopathy in the District of Columbia. The same bill number H. R. 2918 has been introduced in the House by Mr. Smith.

S. 624. Regulations for Chiropractic in the District of Columbia. Introduced by Mr. Fletcher April 13, 1921. It provides for the selection of a board of Chiropractic Examiners and general regulations on the subject within the District.

S. 758. Experiments upon Living Dogs. Introduced by Mr. Myers April 15, 1921. Referred to the Committee on Judiciary. This is the anti-vivisectionist bill which has for years been before Congress. The proposed act makes it a misdemeanor for any person to experiment or operate upon any living dog in the District of Columbia or the Territories of

the United States. The penalty is a fine of from \$100 to \$500.

Another bill, H. R. 2920, provides for the establishment and maintenance of a school and home for feeble-minded persons.

Legislation tending to improve the milk supply of the District has been submitted to the Commissioners by the Health Officer with recommendation for its enactment by Congress. A venereal disease bill, designing to assist the Health Officer and the Commissioners in the control of venereal diseases has been prepared by the Health Officer and forwarded to the Commissioners with a recommendation that it be promptly forwarded to Congress for enactment.

In the Act making appropriations to provide for the expenses of the Government, fiscal year 1922, there is a provision "To aid persons of moderate means who are suffering from tuberculosis to obtain adequate sanitarium and hospital care, \$3,000." This is a new item and details of the method of dispensing this fund have not as yet been fully formulated.



Illinois.—Senate Bill No. 294 provides for the employment of full time medical health officers, paid by the State, for every county in Illinois. It has been endorsed by the Council of the State Medical Society and by local medical societies in the state.

A new ruling of the State Department of Public Health requires all employes to be successfully vaccinated against smallpox. The Director of the Department set the good example by being the first to comply with the rule.

On April 19th the Board of Supervisors of Champaign County unanimously voted to increase an appropriation of \$85,000 for the construction of a county tuberculosis sanatorium to \$109,000. This increase makes possible the erection of buildings that represent the latest and most scientific thought in sanatorium construction and commodious enough for future needs.

It will be located just north of Urbana.



Massachusetts.—On May 3, 1921, the Governor signed Senate bill 392, which provides for the appointment of school nurses in the public schools. This is an amendment to the General Laws, whereby nurses as well as physicians are to be appointed by the local school committee, which is required to assign

a physician and a nurse to each of the schools within its jurisdiction. It is further necessary to provide both physicians and nurses with proper facilities for their work. Nurses are not obligatory in towns of less than \$750,000 valuation.

House bill 1661, to provide for physical training in the elementary and secondary schools of the Commonwealth was signed by the Governor on the same day. How different it was on emergence from the bill originally presented may be judged by the fact that the Committee on Ways and Means recommended that all after the enacting clause be stricken out and substituted what was in effect merely the addition of "indoor and outdoor games and athletic exercises" to the regular courses in spelling, reading, writing, geography, arithmetic, drawing, history of the United States, duties of citizenship, good behavior, physiology and hygiene, etc., already prescribed.



Minnesota.—Legislative economy has resulted in a smaller appropriation for the work of the State Board of Health for the coming two years than for the past fiscal period. The treatment of Pasteur cases will be discontinued July 1, 1921 and such patients will be referred to local boards, while after-care in poliomyelitis will be undertaken by the State Hospital for Crippled and Deformed Children. This work has been under the care of the State Board since 1916. The program in venereal diseases must be modified to meet the loss of aid from the U. S. Government, and a new plan has been determined on which will decentralize the free clinics and place the former cost of this work on the University Medical School and local boards.



Missouri.—The State Legislature has appropriated \$120,600 for the State Board of Health for the biennial period of 1921-1922, with one of the items, \$20,000 for coöperative work in rural sanitation.



Ohio.—The General Assembly has passed the Jones bill, which amends previous legislation so that any county with a population of 50,000 or more may erect its own tuberculosis hospital. The bill is effective about July 1, and a number of counties are planning to establish hospitals. The previous stipulation was that two or more counties could join in

such an enterprise, but the more populous ones can not act without this limitation.

A bill intended to repeal the Kumler bill of two years ago, permitting nurses to administer anesthetics, has passed the Senate and it is expected that the House will concur. The repeal has been favored by the Ohio State Medical Association and other societies.

The Talley bill giving the State Health Department authority to require pure water supplies in municipalities, once tabled, has been revived and coupled with a bill by Senator Chatfield, and referred to the Senate Committee on Public Health. The Talley-Chatfield bill is upheld as a preventive of typhoid fever outbreaks such as that at Salem, O., last year. It will authorize the State Department of Health to compel the corrections of insanitary conditions in public water supplies.

The Wenner occupational disease bill has been signed by the Governor. The purpose of this is to compensate workmen disabled through such diseases. It has developed, however, that the appropriation is not adequate. Bills authorizing the Board of State Charities to arrange for treatment of crippled children from the Juvenile Court and to authorize school officials to make special appropriations for the education of blind children and deaf children, have been passed.

Various bills now pending provide for improvements in institutions, largely for the benefit of tuberculous patients. The constitutionality of the Hughes-Griswold Health Code has been attacked in the courts. The suit is to compel a county auditor to pay to a village a sum of money collected in the county for the village under authority of the law.



West Virginia.—The Legislature has passed the Model Vital Statistics bill.

**Be getting ready now for the
great Fiftieth Meeting of the
A. P. H. A.—New York City,
November 14-18, 1921.**

STATE HEALTH NOTES— GENERAL

National.—The success of the Institute on Venereal Disease Control and Social Hygiene recently conducted by the Public Health Service suggests that public health officers, practicing physicians, nurses, social workers and clinicians are eager for more training and that they will come long distances to get that training (650 attended the Venereal disease Institute) when the best kind of instruction is offered to them.

The Service, therefore, proposes to conduct a general public health institute to take place during the fall of 1921; and to offer 25 to 30 courses including the following: Diagnosis and treatment of tuberculosis, Nutrition in health and disease, Sanitary engineering, Clinic nursing and social work, Clinic management, Courses in syphilis and gonorrhea, Mental hygiene, Industrial hygiene, Child hygiene, Vital statistics, Laboratory diagnosis, Health centers, and Various courses in psychology and sociology.

The Institute faculty will be composed of 75 to 100 leading authorities, including: William H. Welch, William H. Park, John A. Fordyce, Valeria H. Parker, John H. Stokes, Michael M. Davis, Jr., William A. White, Anna Garlin Spencer, Irving Fisher, C. V. Chapin and M. J. Rosenau.

Twelve hundred boys and girls employed in the various industries of the city of Newark, N. J., and attending the continuation schools several hours a week will be examined by a corps of doctors and nurses under the direction of Dr. H. H. Mitchell, health specialist of the Child Labor National Committee. Their physical condition will be compared with what it was when they received their working papers. A correlation will be made between the occupations in which the children engage and their health records while at work.

The object of the study, according to Dr. Mitchell, is to obtain reliable scientific data on which to base conclusions regarding the need of some form of health protection and service for boys and girls who have left the regular schools and gone to work, as well as to throw additional light on the question of whether the minimum age for entering industrial employment should be raised from 14, which is the age established by law in most of the states, to 16, which was recommended by the Children's Bureau Conference on Child Welfare Standards in 1919.

Of the ten largest cities in the United States, New York holds third best place in infant mortality rates for the past year. Statistics collected by the Babies' Welfare Federation show that out of every thousand babies born here during 1920, 85 died. New York's 1920 roll call of new babies totalled 132,856. During the year 11,340 under a year old died. This is an increase of almost 5% over the rate of the previous year, an increase which the Babies Welfare Federation holds the winter epidemics of pneumonia and influenza accountable for. Of New York's five boroughs Bronx has the lowest death rate, 77.6 per thousand, and Richmond the highest, 94.2 per thousand. The statistics for the other boroughs are: Manhattan, 91.7; Brooklyn, 80.5; Queens, 82.1. The poor showing of Richmond is thought to be due to the fact that it is largely rural and lacks traveling facilities for training mothers in the care of children.

Los Angeles holds the lowest mortality rate in the country having only 70.8 deaths per thousand. The second best showing was made by St. Louis, with 76.5 to its credit.

The records of the seven large cities having a higher death rate than New York are: Chicago, 85.48; Cleveland, 86; Philadelphia, 88.57; Boston, 100.8; Detroit, 104.2; Baltimore, 104.2; Pittsburgh, 110.8.

A conference was called at Washington, D. C., on April 14 by the National Information Bureau to consider the coördination of social work. More than 100 organizations were represented, which were classified into nine groups. One of these nine integral groups was that of health organizations.

The health group recommended to the National Health Council, already organized, that in so far as possible, it act as a clearing house of information to all agencies dealing with health. It was recommended further to the National Health Council, that it promote within the states, coördination conferences of national and state agencies in coöperation with state health authorities.

The general committee of the coördination conference was authorized to undertake, through the agency of the National Information Bureau, a study of the work of federal social agencies in local communities to determine the facts as to the interrelations of the work of national agencies in those communities.

In prescribing for a sick stream an intensive

study of stream pollution with special regard to the establishment of a general plan by which any polluted stream in the United States might be purified at a minimum expense has recently been begun by the United States Public Health Service.

As is well known a polluted stream tends to purify itself, but its power in this direction depends on the amount and character of the original pollution, on the volume and speed of the current, and on the extent to which new pollution is added along its course.

The Service has selected for study the Chicago Main Drainage Canal and the Illinois River (which empties into the Mississippi), chiefly because all the primary pollution of this stream originates in Chicago and is accurately ascertainable, both as to amount and character. Analyses taken along the course of the canal and river will determine the degree and nature of the changes that take place in it. Where new pollution is added, its amount and character must be ascertained; and its effect on the old pollution learned. This last is important, for it is quite possible that sundry industrial waste might neutralize each other or might destroy certain types of organic pollution.

Similar work was done on the Ohio River from 1914 to 1917; and the present study is to check the results obtained there.

The final object is to establish fundamental quantitative relationships between bacteriological and chemical pollution of a stream on the one hand and basic principles, such as population, industrial wastes, stream flow, and prevailing temperature, on the other.

From this diagnosis remedial measures may be formulated.



Arkansas.—In accordance with the law county health officers to the number of 79 have been appointed for terms of two years, their work having begun on May 17, 1921.



Delaware.—The Governor of Delaware has re-appointed Dr. G. W. K. Forrest, of Wilmington, Dr. L. S. Conwell, of Camden, Dr. W. F. Haines, of Seaford, as members of the State Board of Health for four years. At the meeting of the Board on April 7th, Dr. William P. Orr, of Lewes, was re-elected President and Dr. L. S. Conwell, Secretary.



District of Columbia.—Dr. John L. Norris Assistant Health Officer of the Department of

Health, has resigned to accept a more remunerative position as Surgeon in the U. S. Public Health Service. This makes the second vacancy in the Department which it may be hard to fill. For more than a year the position of Chief of the Bureau of Preventable Diseases has been without incumbent and there seems to be a difficulty in securing a competent physician for the place, the salary of which is \$2,750 a year. The situation is quoted by the local press as an example of the inadequate scale of wages paid in many city departments.



Georgia.—Dr. B. V. Elmore of Rome and Dr. J. Allen Johnson of Bainbridge, Ga., have been appointed Health Commissioners. The Division of County Health Work of the State Board of Health is urging the county officers to become active in programs of health education, the result of which is that many have provided themselves with motion picture projectors and many films are being shown in rural districts.



Illinois.—In spite of the somewhat inclement weather conditions, Health Promotion Week (April 17-23) was a greater success this year than ever before. The program outlined by the State Department of Public Health for the occasion was generally observed throughout the State. Chicago led the way with an official proclamation by her Mayor and a vigorous campaign headed by Health Commissioner, Dr. John Dill Robertson. East St. Louis, Peoria, Decatur and other leading cities followed practically the same course. Especially noteworthy was the widespread and active interest displayed by the smaller municipalities and rural communities.

The leading features of the week's program were general cleanups, better baby conferences and birth registration. The latter is looked upon as of particular significance since it adds public approval to the plans of the State Department of Public Health to institute a relentless drive against non-registration of births until Illinois has been admitted to the United States Registration Area for Births.

Preliminary to Health Promotion Week, the State Department of Public Health outlined a program for the activities of each day of the week, printed and distributed 25,000 copies of a special bulletin on the subject and sent out 10,000 letters in reference thereto.

The response to this publicity campaign taxed the Department to the limit in its effort to meet requests from local communities for advice, special literature, exhibit material and assistance in the way of speakers. Schedules were so arranged that the motion picture films, stereopticon slides and posters maintained in the loan service made showings each day. Twenty speeches and special demonstrations were made by the limited personnel of the Department. More than 80,000 pieces of literature and more than 400 letters were sent out in reply to special requests.

The successful observance of Health Promotion Week is due in no small measure to the coöperation and assistance that was freely given by the daily and weekly newspapers. Editors all over the State gave liberally of their space and endorsed the measure with strong and favorable comments of their own.

Team work and smooth coöperation are the results of an innovation that brings together on each Thursday morning the Chiefs of the ten major divisions of the State Department of Public Health for a conference with the Director. These meetings give to the division heads a clear insight into the problems and activities of the other divisions and substitute active knowledge of purpose and policy for vague and hazy notions.

The conference on the last Thursday of each month is given over to a review of current literature on public health that proves at once instructive and interesting.

Considerable alarm and publicity was recently occasioned by the escape of a leper from quarantine in East Moline. Vigorous and earnest efforts to locate the leper were immediately instituted. While the search thus far has proved futile and although the case was positively demonstrated as one of leprosy, Dr. I. D. Rawlings, Director of the State Department of Public Health, takes the position that a single case of leprosy is much less a menace to the public health and is a source of decidedly less danger than the constant exposure to such common diseases as smallpox, diphtheria, scarlet fever, and pneumonia. Smallpox and diphtheria showed a marked increase during the past winter and both diseases are positively preventable. The other common communicable diseases respond readily to control measures and should elicit much greater public concern than a case of

leprosy. Leprosy is only mildly contagious in the United States.

Smallpox draws no age limit. This has been clearly demonstrated by several cases among unvaccinated persons of advanced years that have recently been reported. Two women of Loogootee, Ill., one 92 years old and the other 60, who had not been vaccinated since infancy were victims. A man of 80 at Geff and one of 72 at Xinia who had never been vaccinated were also attacked by this disease. Reports show that smallpox has been generally more prevalent in Illinois during the past winter than heretofore and a corresponding increase of activities among anti-vaccinationists is indicated.

In response to a request from the Southern Illinois Medical Association, the State Natural History Survey has undertaken a number of surveys in representative communities to determine the location and prevalence of malaria-carrying mosquitoes in the southern sections of the state. Up to the present time such surveys have been completed at Murphysboro and Carbondale in Jackson County and at Herring in Williamson County. According to reports an attempt has been made to determine the number of mosquitoes relative to the number of malarial cases. The next survey will be carried out during the coming summer at Thebes in Alexander County. Reports ready for distribution may be had from the State Natural History Survey, Urbana, Illinois.

A death on March 18th from trichinosis was recently reported to the State Department of Public Health. The victim was a white woman, age 28, who lived at Macomb, Illinois. The Department calls attention to the fact that trichinosis is a communicable disease of human beings and of hogs, rats, mice, dogs and other animals. It is caused by an organism which is barely visible to the naked eye and is transmitted to humans through the eating of infected hog flesh. Fever and muscular pain are prominent symptoms of the disease that may often be mistaken for rheumatism or typhoid fever. To prevent trichinosis in man, no hog flesh should be eaten unless thoroughly cooked.



Kentucky.—In the State of Kentucky the women's clubs have taken an active interest in public health and have entered into relationships of coöperation with the State Board of Health. The Bulletin of the State Board for

February, 1921, is a Women's Club number, and presents a set of six club study programs on public health, prepared by the Kentucky Federation of Women's Clubs. These programs have been prepared so that any group of club women may be aided in the presentation of one to half a dozen health meetings. Each study is planned on a basis of three or four fifteen-minute papers, with five to fifteen minutes' discussion of each topic. References are given in the outline, so that the writers of the papers may have access to the most recent literature.

The first programme is one that relates to the baby. It discusses pre-natal care and how it is to be obtained. A second paper in this group outlines minimum standards for the care of women in the most critical and important time of life, and suggests how the standards are to be realized. The third and fourth papers in this symposium consider maternity and infant care and the need for public aid for mothers at time of childbirth. The literature available has much of it been adapted to the conditions that exist in this Commonwealth.

Taking up the period of infancy and till entrance to school, a second programme emphasizes the care of the well baby, the planning of the child's day, its sleep, its day-time rest, its diet and its exercise and other matters. Legal safeguards are considered, and public protection of infants as developed in health centres and similar establishments, while two other papers deal with pure milk and the protection of children from communicable disease.

In its consideration of the school child, the Kentucky manual deals first with that all-important though as yet little-developed matter, the sanitation of the schoolhouse. The need of physical examination is another topic, an understanding of which will go far towards offsetting the propaganda of medical liberty leagues. This is a most important section of the whole discussion, including as it does the consideration of the school equipment for school medical work, the relations of the school nurses and those of the school physician. Incidental to this discussion are school clinics, open-air schools and school luncheons.

In similar manner the programmes of the Kentucky Federation consider the dependent child and the defective, together with a brief discussion of delinquency. Of the value of

such considerations of all-important health topics at a hundred centres in Kentucky in well-advised fashion, there can be no doubt. Supplementary items make the State Board Bulletin of even more interest, including "A Health Message" from Dr. A. T. McCormack, State Health Officer, and a playlet, "The Costly Party," prepared by the pupils of the Louisville Normal School and devoted to them through the Federation to health education. The motive of the playlet is that a little girl has the "flu," a party has been scheduled, and, despite the warning of the doctor, it is given and the disease spreads among the invited children. Its book gives a running fire of health lessons.



Maine.—The Maine State Board of Health is making a campaign in favor of breast-fed babies. This is the baby's right and efforts are made to have every mother assure to her child the start in life that breast feeding will give. Nothing is so good for the baby as mother's milk and nearly every mother is capable of nursing her child if she wishes so to do.

In its efforts to better the statistical work of the state the Maine authorities are noting to the people that they are the foundation stones to all public health work. The individual should recognize the value of good statistics to himself personally, and interest himself in the improvement of them. Birth records are indispensable and the laws with reference to the recording of births, deaths, marriages and divorces are important ones and should be strictly enforced.

What the public health nurse means to the community is set forth in a little statement by Dr. L. D. Bristol, State Health Commissioner, who notes that the nurse is the strong right arm of the health forces of the state. She is a graduate nurse, registered by the state, and with special training to fit her to engage in the preventive, remedial, and educational health work of any community. Wherever babies are born, and mothers can not have the services of a private nurse; where there is lack of care among the children through ignorance or neglect; where home conditions are bad; where there are schools in which children are suffering from uncorrected physical defects; where there are men, women, and children suffering from tuberculosis without instruction as to proper care of themselves and their families;

where there is sickness or distress among poor; in these and many other places the public health nurse finds a field for her work.



Massachusetts.—Details have been completed for a demonstration in public health organization to be carried out on Cape Cod, and on May 16, 1921, the project was launched under the direction of Dr. Russell B. Sprague, a former district health officer together with a nurse furnished by the local chapter of the Red Cross. Ten towns have entered into coöperation with the state authorities and the U. S. Public Health Service, the whole organization bearing the name, Cape Cod Health Bureau. The towns interested in the demonstration are: Barnstable, Bourne, Brewster, Chatham, Eastham, Orleans, Sandwich, Truro, Wellfleet and Yarmouth.

The corps of workers will consist of a full time health officer, a sanitary inspector, a public health nurse and an office assistant.

Reports will be made and plans will be subject to approval by the local health boards and the State Department of Public Health, as well as the Public Health Service.

The functions of this staff will be similar to those of a full-time health officer and his assistants in a municipality and they will range from the physical examination of school children to the abatement of nuisances, including the control of communicable diseases, inspection of milk and water supplies, the promotion of child welfare and clinics in coöperation with established agencies, the inception of maternity and infant hygiene in towns where it is not carried on.

The health forces of the city of Boston have had this season a series of interesting meetings in different sections of the city. Altogether there were public gatherings in nine centers in different sections of the city and to very varied groups of citizens. In the North End the audience was largely Italian, at the West End, it was 95% Jewish, in other sections the companies were mixed, but everywhere the people manifested the same kind of interest. This interest was heightened in that special groups had speakers in their own tongue, E. A. Campana, a sanitary inspector of the Boston Health Department, addressing the Italians and Dr. Wilinsky using the Yiddish vernacular.

The meetings had for their slogan, "Your good health and mine," in each program there

was singing and in each one one or more motion pictures relative to health. One of the most interesting features was a period during which the members of the company assembled were encouraged to ask questions. Some of these were of value, for example, whether chewing gum after meals is helpful in cleaning the teeth. The speaker said that despite some contrary opinions it was pretty well established that such a process was of use and aided in the prevention of dental troubles. Another question was as to how the pig, wallowing in filth, could be other than a means of transmitting germs to man, to which the answer dwelt on the immunity of certain animals to bacteria and showed that pigs are not dangerous in that way. Other features of these question periods developed complaints against health services and once or twice sought to raise the question of tenant and landlord.

The meetings proved highly successful and it is proposed to continue them. Through the coöperation of Health Commissioner W. C. Woodward and Mr. James T. Mulroy, Director of the Department for the Extended Use of Public Schools, it is proposed to establish a permanent health center in each school center building at which the district health officers may have headquarters and meet the people of their districts from time to time.



Michigan.—This state has already started its "laboratory on wheels," on its rounds for the purpose of inspecting sanitary conditions at Michigan health resorts. During the season of 1920 this laboratory visited 131 summer resorts and hotels, reporting that nearly half the water supplies were unsafe, fully half of them had no adequate method of disposing of garbage, while almost as large a percentage of the milk supplies would not pass the bacteriological tests for "reasonably clean" milk. "People in cities are learning the value of sanitation," states Dr. R. M. Olin, the State Health Commissioner, "and in choosing a place to spend their vacations will come to demand the same protections that are afforded in everyday life." Another expert in the Board, Maj. Edward D. Rich, notes that when the crowded conditions at resorts are considered and the fact that a large portion of the patrons are not at physical par, the need for the closest health supervision is evident.

Rural typhoid is rife in Michigan and on

May 30, according to local reports was present in 47 out of the 83 counties. There are a number of counties free from the disease which are entirely surrounded by others in which there are cases of the disease. Wayne County with a population of 180,000 has more cases than Detroit with 500,000 or more. On account of the prevalence of the disease the health authorities are urging prophylaxis, using the pertinent argument that the A. E. F. was practically free from typhoid.

Within the past few weeks the Supervisors of Jackson County, Mich., have appropriated \$5,000 to coöperate with the Division of Animal Industry, in eradicating bovine tuberculosis; two other counties, Wayne and Hillside have appropriated \$3,500 each, while five other counties have voted smaller sums for the same purpose. This is evidence of a fairly systematic effort to rid the state of the tuberculous cow.



Minnesota.—The State Board of Health at a meeting of May 3, 1921, made the following changes in staff: Secretary and Executive Officer, Dr. A. J. Chesley, from Director, Division of Preventable Diseases; Director, Division of Preventable Diseases, Dr. Orianna McDaniel from Assistant Director; Dr. Charles H. Halliday, Senior Epidemiologist, Division of Preventable Diseases.

On account of the failure of the last Congress to continue Federal aid to the states in the control of venereal diseases, this work in Minnesota has been curtailed. The Legislature could not see its way to cover the deficiency, although the Senate Committee did recommend an increase from the \$30,000 of last year to \$40,000. The State Board of Health frankly outlining the situation calls upon the medical profession for the continuance of the coöperation that has been afforded in the past.



Nebraska.—A new Division of Child Hygiene and Public Health Nursing has been created in the State Bureau of Health with Miss Margaret McGreevy, R. N., for Director.



New York.—Smallpox has been declared to be epidemic in North Tonawanda.

The Healthmobile began its third season on April 25 under the direction of the Division of Public Health Education. By means of this specially equipped motor truck it is possible to carry the health campaign into sections of

the state remote from traction or steam lines. The plan adopted last year of combining forces with the Division of Child Hygiene is being carried out this year. Each afternoon a child health consultation clinic is held under the direction of a physician from the Child Hygiene Division, assisted by a state supervising nurse and the Sanitary Supervisor of the district. The health officer is always invited to be present. This is followed in the evening by a meeting open to the public, health films being shown. When possible a speaker is provided.

At the meeting of the State Medical Society at Brooklyn May 3 to 5, one session of the Section on Public Health, Hygiene and Sanitation was devoted especially to the problems of health officers and medical school inspectors. The program of a second session was prepared by the New York State Association of Public Health Laboratories while the two remaining sessions were held jointly with the sections on Medicine and Pediatrics respectively.

The fifth annual meeting of the New York State Association of Public Health Laboratories was held at Brooklyn, May 4. The scientific program included the following papers: A comparative study of diagnoses made in various laboratories in New York State by Miss Ruth Gilbert, Albany; Pneumococcus infection and immunity by Dr. O. T. Avery, New York; Serological studies in tuberculosis by Messrs. S. A. Petroff and George Ornstein, Trudeau; Coöperation between the central State Laboratory and the local municipal and county laboratories by Dr. A. B. Wadsworth, Albany.

At the business session the officers elected were: President, Dr. W. B. Stone, Schenectady; Vice-President, Dr. W. C. Noble, New York; Secretary-Treasurer, Miss M. B. Kirkbride, Albany; Members of the Council, Dr. W. S. Thomas, Clifton Springs, and Dr. Ellis Kellert, Albany.

The mid-year meeting of the association will be held in the autumn at the State Laboratory, Albany.

The State Board of Health is calling the attention of the newly married to the importance of registration of the fact. It should be a part of the regular duties of the person who performs the ceremony to transmit the certificate of marriage with the original license to the clerk who issued it, but this sometimes is not done. In New York state it is the

custom of the State Department of Health to send a circular to all newly married women and in default of the arrival of this, inquiry should be made of the local registrar whether the marriage was properly recorded.

This is the time of the year for the regular conferences of the district health officers in New York state. On May 10 the Utica group was called to order in Hotel Utica; on May 12 three counties, Monroe, Livingston and Ontario were represented at a meeting in the office of the State Sanitary Supervisor in Rochester; on May 24 local officials came together in Saratoga Springs from the counties of Fulton, Hamilton, Montgomery, Schenectady and Saratoga; and the following day was the date for the Jefferson-Lewis county conference at Watertown. On May 31, three counties, Westchester, Putnam and Dutchess, sent delegates to the meeting at Brewster and June 1 saw another gathering of the kind in Middletown representing Delaware, Sullivan, Ulster, Orange and Rockland counties. At each of these meetings some local dignitary presided, local speakers presented local phases of health problems and the State Board was represented by one or more speakers, Dr. M. Edgar Rose, Director of the Child Welfare Division of the Board being present at all of them. All public health nurses of the counties were invited to attend and take part in the discussion, while at Middletown the nurses had a conference of their own.



New York City.—The Greenwich House Health Center, with the idea of giving impetus to its baby welfare work, recently demonstrated a "Prize Mother's Contest." The idea is one originating with Mr. and Mrs. Routzahn of the Russell Sage Foundation, some account of an earlier one having been published in the *A. P. H. A. News Letter* for April, Page 3. The mothers attending the Baby Feeding Clinic of Greenwich House were given notice that on April 27 there would be a mother's contest instead of the familiar baby's contest. At the appointed time and place there was a health exhibit. The mothers were greeted at the entrance and given an opportunity to answer the following questions, the answers to which were written down on score cards. The questions were:

1. Age of baby, — years, — months —.
2. Number of hours sleep per 24 hours?
3. Baby sleep alone?

4. Windows in baby's sleeping-room? Open? Shut?

5. Give baby anything to make it sleep? What?

6. Breast fed? Artificially fed? What used?

7. Baby nursing? Weaned? At what age?

8. How often is baby fed?

9. Give baby any other food than milk? What?

10. Ever use a pacifier?

11. How often is baby bathed?

12. What clothing used?

The rating was fixed immediately and before leaving the mothers received their prizes. There were gold, blue, red, green or black seals, representing 100%, 90%, 80%, 70% and failures. When the mother was finished in the clinic she was directed to the prize table and allowed to select one piece or another of aluminum ware, which would be of use in making up food for the baby. The reason for the selection of these articles is because the mothers in the district are largely Italian, and with these people it is difficult to get them to wean the babies when the time comes. Every factor was used to make the contest attractive, the seals were mounted on tags and the tags had health mottoes on the back in typewritten characters.

One of the by-products lies in the cards, which will be used by the nurses in follow-up work in the families.



North Carolina.—Another forward step in the protection of the public health is announced by the State Board of Health, the newest move being aimed at the eradication of diphtheria. Through Dr. C. A. Shore, Director of the State Laboratory of Hygiene, notice is being sent the physicians of the state that toxin-antitoxin is now ready for distribution at the nominal charge of ten cents for the three doses needed to give immunity.

The authorities explain to the people in notices of various kinds that toxin-antitoxin is different from diphtheria antitoxin. The latter is used for treatment and, in 1,000 unit doses, for immediate protection. The immunity rendered by the toxin-antitoxin mixture is believed to last for years, certainly as long as the immunity produced by typhoid vaccine. There is good reason to believe that diphtheria can be practically stamped out by the wide-

spread use of diphtheria toxin-antitoxin mixture.

North Carolina claims to be the first state in the Union to make the means of immunity from diphtheria available to all citizens virtually without cost.



Nova Scotia.—The Massachusetts-Halifax Health Commission reports that a special dental service is being organized by the Commission for the summer months. It will be under the advice and general guidance of the Consultant in Dentistry, Dr. Frank Woodbury and Dr. Arabella MacKenzie, a pedodontist at the preschool age dental clinic in Admiralty House Health Centre. Appointment of Dr. J. S. Bagnall, as supervising dentist and Dr. J. H. Lawley, first assistant, has been made.

The School board of Halifax has arranged to have the school nurses make social investigations in the homes of children needing dental work and make engagements for their treatment in the Dental Infirmary. These nurses will give a month of summer holiday to this work. The newly appointed school nurse will begin work at once in order to help speed up this campaign of dental hygiene.

Children having need of operation for the removal of adenoids and tonsils will be given the right of way in the dental hygienic clinic. In the beginning only children under 10 years of age will be treated. Later in the Summer perhaps the age limit may be raised to 12 years.

The same opportunities will be afforded the school children of Dartmouth both in the dental hygiene and the nose and throat clinics. These special clinical services have proved of great interest to members of the Canadian Medical Association meeting here in June.



Ohio. — The school health pageant, "Health Wins," is meeting with much favor throughout the state. It has been adapted by its author, Mr. J. Clarence Sullivan, to out-of-door use and is booked as an attraction as well as an educational feature at many fairs, at the Mississippi Valley Conference and at meetings of local health leagues. Fully a score of dates of one to three days are already booked and it will be active as an outdoor attraction till the snow flies.

The Ohio Public Health Federation, which was revived early this year in view of certain political movements, includes no less than a

dozen state-wide organizations, which have taken the matter in hand of giving the state a fair deal in matters of importance in health administration. The associations federated are the following: Ohio Federation of Women's Clubs, Ohio State Association of Graduate Nurses, Ohio State Medical Journal, Ohio State Dental Association, Ohio Public Health Association, Ohio Hospital Association, Ohio State Pharmaceutical Association, Homeopathic Medical Society of Ohio, Ohio Veterinary Medical Association, Ohio Osteopathic Society, Ohio Eclectic Medical Association and Funeral Directors and Embalmers Association of Ohio.

The city of Cincinnati, through its Department of Health, is circularizing the people in the interests of protection from diphtheria. The principles of the Schick test are outlined and a blank form of request is attached so that parents may ask for a test for their children, the test to be made in the school building and under the direction of the Department, the General Hospital and the Medical Colleges of the University. As a result of the distribution of information the Health Commissioner, Dr. W. H. Peters, has received requests for the testing of 255 children in one of the schools and 300 requests from the parents of children in another school. In the group first-named there were 68 positive reactors. The directors of two orphan asylums have also requested tests of the children under their care.



Ontario.—The Province of Ontario has equipped the motor truck of its Child Welfare Clinic with projecting apparatus and health films. The car is fitted up as a clinic with a physician and a nurse for personnel. The object of these demonstrations is to impress the public with the need of appointing a permanent nurse in every community to carry on the good work which the provincial nurses have started. Each nurse is provided with a motor car, to enable her to cover as much ground as possible and get in touch with all classes of people.



Oregon.—The State Board of Health has resolved itself into a Bureau System, as follows: Bureau of Administration, Dr. C. J. Smith; Bureau of Legislation and Rules and Regulations, Dr. Andrew C. Smith; Bureau of

Nursing, Dr. F. M. Brooks; Bureau of Epidemiology, Dr. George Houck; Bureau of Vital Statistics, Dr. J. H. Rosenberg.

The quarterly meeting of the Board was held at Grants Pass, May 10, 1921. Rules and regulations were adopted for the parole of cured venereal cases for one year after leaving institution.



Texas.—Texas has now a number of different active forces at work for the betterment of the public health. The State Department of Health has under way the development of the Bureau of Child Hygiene, and Public Health Nursing, having called to the position of Director, Mrs. Lydia K. King, a resident of the state for 22 years, a teacher of health in the summer normals of Oklahoma and Texas, a nurse with the A. E. F. and since then till now in coöperation with the Texas State Board.

Together with other states having a large negro population, Texas emphasized Negro Health Week, from April 3 till April 9, during which time about a quarter of a million of these people participated in the celebration. A special feature was emphasized each day, Wednesday being Children's Day; Thursday, Tuberculosis Day; while on Sunday there were health sermons in all the churches.

The Texas Public Health Association is engaged in an anti-fly and anti-mosquito campaign, and against the latter is noting the facts, that a mosquito can fly only a little more than a mile, that breeding places within this distance of the home are unsafe, and that in all events the home should be screened. Fresh air is another of the health subjects that this Association is emphasizing. "Overheating like overeating, is the cause of much ill health to man," is one of the sentiments that this campaign has evolved.

At the present time the Texas Public Health Association is carrying on a campaign for a \$300,000 hospital for negroes. There is no bed in Texas for the tuberculous negro outside the penitentiary, and the economic loss through this class is set at \$14,000,000 a year.

The city of Dallas has started on a campaign of education among its citizens, and has set forth important health truths and conditions in a special bulletin or progress report.

INDUSTRIAL HYGIENE AND OCCUPATIONAL DISEASE

Abstracted by DRs. E. R. HAYHURST and E. B. STARR.

Industrial Posture and Seating. Special Bulletin No. 104 of the Dept. of Labor comprises 56 pages amply illustrated on this subject. The study was undertaken by the Bureau of Women in Industry with the idea of gathering together experience and designs from those who had given the matter serious consideration. The problem was in reality a question of eliminating, in so far as possible, the fatigue which comes from bad posture, or from continuously working in one position. Lack of imagination is responsible for much bad seating. Custom has decreed the way in which many operations are performed, rather than that the work is fitted to the worker. "A seat that never wears out" is the slogan that sells a certain make of round-top factory stool. The "ad" might better read: "The seat that wears the worker out."

Part I discusses posture in industry with comment upon the relation to fatigue, variation in posture, and what constitutes good and bad posture. Part II discussed seating, including chairs, the material of chair seats, shape and size of seats, adjustment, backs, foot-rests, benches and adaptability to handle supplies with many illustrated examples of standardized seating. A bibliography on the subject is added. The conclusions are: (1) That posture must be varied—continuous sitting or standing are both harmful and the will of the person is the ideal guide; (2) Work conditions should be such that correct posture is possible—there is no one chair that is best for the industrial processes. To provide a good seat is not enough; the important thing is to bring all parts of the work place into the best possible relationship.—Bureau of Women in Industry, *New York State Industrial Commission*, April, 1921.



Ventilation, Heating and Humidity in Factories.—For a concise statement of Labor Law bearing on the subjects indicated, in the New York Labor Law, Chapter 50, of March 9, 1921, paragraphs 299-300 are exemplary. Size of rooms and air space per person are also succinctly stated thus: "No

greater number of persons shall be employed in any room of a factory between six o'clock in the morning and six o'clock in the evening than will allow each person so employed two hundred and fifty cubic feet of air space nor, unless by written permit of the commissioner, than will allow four hundred cubic feet of air space for each person employed between six o'clock in the evening and six o'clock in the morning. Such rooms shall be lighted by electricity whenever persons are employed therein between six o'clock in the evening and six o'clock in the morning.—*New York Industrial Commission*, (became a Law, March 9, 1921).



A Physiological Basis for the Shorter Working Day for Women.—This article reviews briefly the arguments and evidences in support of the 8-hour day and discusses the condition known as fatigue. "Fatigue, like pain, is one of the great safety valves of the human machine. It is protective. It is a physic defense. Like pain, it warns of and protects against that which is worse than itself. It is a sign that one is going too fast." Numerous examples are given of increased production as the result of shortening the work day. Among those which have not been cited broadcast heretofore are examples taken from the report of the Illinois Industrial Survey Commission, 1918. Here the results in a soap factory which changed from the 10-hour to 8½-hour day, and its standard week from 55 to 48 hours, resulted in an increase of 11.8 per cent per hour and an increase from 42.8 cases to 45.5 per day. A similar finding is given in a corset factory and in buttonhole making, etc. The legal aspects of the problem including the opinion of the U. S. Supreme Court in 1903 are considered.

The sciences of physiology and psychology, the law, the decisions of the courts, the police power of the States, the example of the Congress, the Peace Conference, the joint interests of both employer and employee, the rights of society expressed in

the voice of an enlightened social conscience, all unite in favoring the establishment of the 8-hour day as the maximum which should be required of women in industry. For upon the women depends the vigor of the race, and the vigor of the race must not be exploited for present-day purposes instead of for racial conservation.—George W. Webster, Bulletin No. 14, *Women's Bureau, U. S. Dept. of Labor*, February, 1921.



Silicosis and Tuberculosis Among Miners.

—For the year ending July 31, 1919, the chairman of the Miners' Phthisis Medical Bureau, reports over 32,000 statutory clinical examinations and investigations made. The attack rate of tuberculosis not complicated by silicosis was 255 per 100,000 as compared with 259 for the preceding year. While the prevalence was at the rate of 1,141 per 100,000 as compared with 1,267 and 909 for the two preceding years respectively. Tuberculosis with silicosis was 869 per 100,000, almost the same as the previous year. The unanimous opinion is that a technically satisfactory radiogram should be available for diagnosis. Tuberculosis affecting the silicotic miner is relatively non-communicable to healthy persons. However, the *Bacillus tuberculosis* from such lungs is just as vulnerable to guinea pigs as is the bacillus from an ordinary case of pulmonary tuberculosis.—*British Med. Jour.*, No. 3131, January 1, 1921, p. 26.



Factors Which Hinder the Extension of Industrial Hygiene.

—Some managers feel that the whole subject of industrial hygiene is in an experimental stage and they prefer to conserve their time and money until the advantages are more clearly seen and the most successful line of development found. A fairly common conviction is that it is

useless to improve conditions in the plant while conditions in the home remain unimproved:—in a way this hinges on whether employees are getting a "living wage" and the degree of responsibility of the employer for setting the standard of requirements for healthy living. The progressive manager has also to justify to his directors outlay which in the nature of the case will not certainly yield dividends or quickly tangible results. Opposition from the employees themselves is often found, in that they reason whether money so spent might not have been better spent on increased wages. Employees are also apt to misconstrue the motive. Post-war conditions are offered also as an argument that the time is unpropitious either for launching new plans or for gaining any representative view of conditions. The expense of getting real results may be considerable where employees live at long distances, necessitating an expensive visiting nursing service. Again, many employers and managers who genuinely desire "to do the best for the employee" have proceeded without getting expert advice and as a result have fared badly in that they have installed more or less expensive improvements which have given little results. Part-time medical services concerned mostly with accident work is not a substitute for industrial hygiene. "Broadly it may be said that while there is an interest in the subject of industrial hygiene there is a lack of continuous and organized effort to promote it, and that its full importance as a factor in commercial prosperity is not realized." "On the whole we are forced to the conclusion that there is general lack of recognition of the occupational factor in disease."—*Report No. 7, Survey of General Conditions of Industrial Hygiene in Toronto*, Sub-Committee of the Privy Council for Scientific and Industrial Research, Ottawa, 1921, 21 pages.



Hotel Astor will be the Hotel Headquarters of the Fiftieth Annual Meeting of the A. P. H. A. The date of the Meeting is November 14-18, 1921, and the place, New York City.

PUBLIC HEALTH LABORATORY NOTES

Abstracted by ARTHUR LEDERER, M. D.

Diagnosis of Typhoid and Paratyphoid Infections.—The high titer agglutinating serum can be employed to demonstrate the presence of typhoid and paratyphoid bacilli in feces both for diagnostic purposes in suspected typhoid infections and to determine their presence in the feces from convalescing cases without resorting to cultures. The typhoid bacilli can appear in the urine at the same time that an extensive circulatory bacteriemia exists, before a positive Widal reaction is obtainable. The finding of the bacilli in the urine may prove the only definite means of establishing a definite typhoid diagnosis. A typhoid bacillus cystitis can apparently exist without producing an agglutinin production in the blood. A typhoid or paratyphoid bacteriemia unsuspected in an operative case may prove disastrous to the patient. This paper and a previous one show that the detection and identification of motile bacilli in urine can prove of considerable diagnostic value.—Henry J. Goeckel, *Jour. Lab. Clin. Med.*, Vol. 6, No. 6, (1921).

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Ice Water-Bath in Complement Fixation for the Wassermann Reaction.—By this modified technic the tubes are placed in a rectangular galvanized iron pan with stopcock for drainage. Ice water is poured into the pan until it reaches a level higher than that of the fluid in the tubes. The temperature of this water is kept at 8°C. for 15 minutes by the addition of small pieces of ice. (The temperature of a tube placed in the ice water-bath is reduced to 9°C. in five minutes or less. After the expiration of 15 minutes, the ice is removed with the result that the temperature of the ice water-bath rises approximately one degree each half hour. At the end of the hour, the ice water is drawn off by opening the stopcock and the pan is refilled with water at 40°C. The tubes are allowed to remain in this for a period of five to ten minutes in order to remove the chill from the tubes before they are placed in the 37.5°C. water-bath. The

sensitized cells are then added and the tubes are placed in the 37.5°C. water-bath for one hour at which time the readings are made.—W. W. Duke, *Jour. Lab. Clin. Med.*, Vol. 6, No. 6, (1921).

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Staining of Phagocytes.—To 100 cc. of neutral distilled water there are added 20 cc. of glycerin and alcohol and then 2 cc. of phenol. In this fluid there is dissolved, by shaking for two or three minutes, crystal violet 0.06 gram and pyronin 1.2 gram. The stain is ready for use without filtration, and keeps for a long time if shielded from direct sunlight and the bottle is well stoppered. Smears are made on carefully cleaned glass slides and merely dried in the air. The stain is flooded on for five to ten seconds, and thoroughly washed off with distilled water, but direct drying of the preparation by blotting paper is avoided. The nuclei are stained violet and the cytoplasm takes a delicate lavender tint with the cell limits clearly and sharply defined, so that it is easy to distinguish between intracellular and extracellular bacteria, which are coloured deep purple. The chief advantage claimed for the method is that there is total absence of annoying precipitates which are too often associated with the staining of phagocytes.—*Johns Hopkins Hosp. Bull.* February, 1921; *Brit. Med. Jour.*, April 9, 1921.

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Studies of Measles.—Monkeys (*Macacus rhesus*) are susceptible to inoculation with the virus of measles. The symptomatology of the reaction induced in monkeys by inoculation with material containing the virus of measles is described. The symptoms and course of this reaction closely parallel those of human measles. The microscopic pathology of the lesions of the skin and buccal mucous membrane of monkeys experimentally infected with the virus of measles is also described. These lesions are essentially identical with the corresponding lesions of measles in man.—Francis G. Blake and James D. Trask, Jr., *Jour. Exp. Med.*, 33, 385 (1921).

Metabolic Study of the Urine in Pellagra.

—The mineral metabolism seemed to be abnormal especially in the actively pellagrous stage as witnessed by the low P_2O_5 excretion despite the fact that the diet taken at the time was a generous one with abundance of milk. Indications were present of a heightened putrefactive process in the intestines. The presence of casts or albumin or both casts and albumin in the urine gave evidence of more or less kidney change in about 50% of the cases. Marked pellagra can occur with no evidence of kidney change. There was low excretion of total nitrogen and the ordinary urinary ingredients. The urea ratio, in general, was low, and in certain cases with fair total nitrogen the urea ratio was lower than should be expected, a finding which suggests liver insufficiency. There was a heightened ratio for ammonia nitrogen and undetermined nitrogen. The metabolic level during the active stage of the disease was low as further shown by the low excretion of the uric acid and creatinin. The creatinin coefficient was much below normal. The utilization of protein was found to be subnormal, even after several weeks of a remedial diet. With at least a month on the curative diet, the urinary ingredients rose to approximately normal amounts, the urea ratio rose to normal and the ammonia ratio fell to normal. As suggested by Goldberger, Wheeler and Sydenstricker, the disease may be differentiated into at least two types: (1) a type with marked skin symptoms but with little physical degeneration; and (2) a type with slight skin symptoms but with profound systemic involvement. The abnormality in the urinary findings was greater for the systemic type than for the dermal type.—M. X. Sullivan, R. E. Stanton and P. R. Dawson, *Arch. Int. Med.*, 27, 387, (1921).



Cultivation of the Gonococcus.—The essential factor is reduced oxygen tension. Moisture is also necessary for good growth. A reduction in the oxygen tension of 10% is sufficient to produce optimal growth. The organism will grow luxuriantly, if the oxygen tension is suitable and moisture and uncoagulated protein are present, on media of ordinary reaction range. The technique is very simple. Ordinary broth agar (2%) is melted, and to it is added half as much

sterile ascitic fluid. The tubes are sealed with sterile rubber stoppers, slanted, and kept always in the incubator. They are copiously inoculated, care being taken to prevent cooling, and the inoculated tubes held horizontally, with the agar uppermost, are passed three or four times through the Bunsen flame and quickly corked. This is quite sufficient to lower the oxygen pressure to the requisite degree, when the tubes are returned to the lower incubator temperature. Colonies are visible in from 15 to 18 hours, and profuse growth is obtained in 24 hours. On this medium the gonococcus is viable for about seven days.—Swartz, Shohl and Davies, *Bull. Johns Hopkins Hosp.*, Dec., 1920, *Brit. Med. Jour.*, April 2, 1921.



New Method of Adding Cresol to Antitoxins and Antiserums.—A mixture of equal parts of ether and cresol is presented as a new preservative for antitoxins and serums. This mixture is added in amounts necessary to give the required concentration of cresol. The addition of this mixture causes much less precipitate than does cresol alone. Subsequent precipitation is not necessarily limited by the ether, it is never greater than that in products containing cresol alone. The mixture of ether and cresol is more strongly antiseptic than cresol alone. In therapeutic application, the ether is not a disadvantage. In the case of intravenously injected antitoxin, the indication that the ether may under certain circumstances reduce the incidence of adverse reactions warrants further comparative work. Ether may be added to the toxin-antitoxin mixture without disturbing the balance of the mixture.—Charles Krumwiede and Edwin J. Banzhaf, *Jour. Inf. Dis.*, 28, 367, (1921).



Vitality and Viability of Hemolytic Streptococci in Water.—Hemolytic streptococci, when placed in water, remain alive for a variable length of time, depending upon their number, upon the temperature, upon the presence of other organisms, and upon virulence. They are capable under special conditions, of retaining their vitality for a long time, but under natural conditions, if placed in water, they will succumb quite rapidly, especially if recently isolated.—George S. Livingston, *Am. Jour. Hyg.*, 1, 239. (1921.)

Effect of Vaccination Against Influenza and Some Other Respiratory Infections.—

The prophylactic effect of a widely used vaccine containing Pfeiffer bacilli, streptococci and pneumococci has been studied clinically and statistically. The authors have recorded during a period of about 7 months the respiratory ailments which developed among 6,066 persons, approximately half of whom had received the vaccine. Some of these were attacked by influenza in the 1920 wave, which occurred within two months of the vaccination; in addition, the usual number of pneumonia and common cold cases among those observed afford material for comparisons. Rhinitis and bronchitis developed with frequency about equal in vaccinated and unvaccinated groups. The influenza attacks among the 2,873 vaccinated numbered 118 (4.1%) and among the 3,193 unvaccinated numbered 152 (4.8%); 7 pneumonia complications with 2 deaths occurring among the 118 vaccinated patients and 12 with 2 deaths in the 152 unvaccinated. Both the influenza and pneumonia attack rates are hence somewhat lower among the vaccinated, but the difference is not great. Pneumonia, not associated with influenza, was also less frequent among the vaccinated, only 6 of 19 pneumonia patients having been vaccinated. The small numbers hardly warrant, although they suggest, a favorable conclusion regarding some slight prophylactic value for pneumonia. That any considerable degree of protection against influenza was conferred by the vaccine seems unlikely.—Edwin O. Jordan and W. B. Sharp, *Jour. Inf. Dis.*, 28, 357, (1921).



Cultivation of a Filtrable Organism from the Nasopharyngeal Washings in Influenza.

—A minute, filtrable, gram-negative organism has been isolated in pure culture from the nasopharyngeal washings of early cases of uncomplicated influenza. A typical clinical picture and characteristic pathologic changes have been produced in rabbits by the intratracheal inoculation of these cultures. Both initial cultures and subcultures have proved pathogenic for animals. The same clinical and pathologic manifestations were produced in a series of rabbits by the intratracheal inoculation of a culture kept at incubator temperature for fourteen months. The infectious agent has been car-

ried through several animal passages. The organism has been recovered in pure culture from the lungs of animals suffering from the experimental disease, and has been proved to be again virulent. All control studies have been negative.—Leo Loewe and Frederic D. Zeman, *Jour. A. M. A.*, 76, 986, (1921).



Preservation of Complement.—The author reports the results of his trials with Rhamy's method of preserving complement for Wassermann tests, as described in the *Journal of A. M. A.*, Sept. 22, 1917, p. 973. Rhamy mixed fresh guinea-pig serum with a sterile 10% solution of sodium acetate in physiologic sodium chlorid solution in the proportion of 4:6. Hammerschmidt confirms that by this method complement can be preserved for at least ten days (possibly longer) without loss of strength.—J. Hammerschmidt, *Muench. Med. Woch. Schr.*, 67, 1382 (1920); *Jour. A. M. A.*, 76, 973 (1921).



Fibrin and Serum as a Culture Medium for Tissues.

—A technic is described by which a medium composed of fibrinogen suspension, serum, and embryo juice may be made. Fibroblasts grew in this medium about as well as in plasma and embryo juice. A strain of connective tissue remained practically as active as the control for several passages.—Albert H. Ebeling, *Jour. Exp. Med.*, 33, 641, (1921).



Increase of Blood Uric Acid in the Toxemias of Pregnancy.

—In the blood of patients with eclampsia, hyperemesis gravidarum, and with the symptoms of preëclamptic toxemia together with arterial hypertension, the uric acid is markedly increased. Delivery and recovery from the symptoms are associated with a gradual return of the uric acid in the blood to its normal amount. Arterial hypertension in pregnancy unassociated with toxic symptoms is not unaccompanied by uric acid retention. The toxic vomiting of pregnancy is associated with a marked increase of the uric acid in the blood, whereas the nervous or physiologic vomiting is not. It seems possible, therefore, to differentiate these conditions by quantitative estimations of the uric acid of the blood.—J. Lisle Williams, *Jour. A. M. A.*, 76, 1297, (1921).

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LABOR CAMP SANITATION—A BASIS FOR EDUCATION AND CITIZENSHIP

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San Francisco, Cal.*

Read before joint meeting of Sociological and Industrial Hygiene Sections, American Public Health Association, at San Francisco, Cal., September 14, 1920

Labor camps in California have proved a new and substantial basis for citizenship on the part of a class heretofore scarcely considered in the problem of government. With camps having proper sanitation the lower type of labor and the agitator are eliminated. Campers of today aid the inspectors by giving notice of bad sanitary conditions.

DURING the past ten years California has witnessed a complete transformation in the living conditions of her migratory laborer. During the latter years of the same period there has come an even more striking change in the attitude of our people regarding necessary standards of construction and sanitation of labor camps.

Twenty years ago the labor camp, except in established year-round occupations, was almost an unclassified object. Large crowds of people were brought together indiscriminately to pick hops or prunes or work in the cannery or packing house and the fact of their being together was an incident unconsidered in the season's program. Sometimes they were people, largely women and children, who were supposed to live at home, and who

perhaps came and camped close to the scene of activities for their own convenience or by way of a vacation. Sometimes they were hoboes who demanded nothing. Increasingly, from year to year came the distressed, or lazy, and usually large-familied immigrant, not yet adjusted to his environment, grasping at these opportunities to lay by a little capital for the rainy season.

In those days the operator who provided a camp ground with drinking water was regarded as generous in the extreme. Generally it was assumed that every pretty little creek bottom, every fence corner, every big tree shade area was a proper camping place. Each worker, or worker's family, brought his entire outfit, and nature supplied the details. Throughout the balance of fall and winter, until

the rains and floods came to clean the face of nature, these erstwhile pretty little places stunk to the heavens with human and animal offal, garbage, rubbish and filth of all varieties and descriptions, while flies multiplied and thrived without protest. I have lived in those camps, and remember that I deliberately chose the protection to be found in a clump of poison oak or scrub brush in preference to the toilet facilities which happened to exist, or which chanced to have been provided, and which within two or three days of the opening of the season, were sufficiently fouled to be productive of extreme nausea on sight. I also recall vividly, sitting down to eat on the ground or at an improvised table, and keeping one arm waving in front of me to protect the food from flies while I hurried it to my mouth with the other.

These conditions probably reached the extreme about the year 1913, when heavy and increasing crops, and the vastly recruited army of workers, made the unregulated methods of the past impossible without serious friction. You have all heard of the Wheatland hop riots of that year. We can well afford to consider briefly the actual camp conditions which existed prior to that outbreak. The report of an unprejudiced investigator, one of my predecessors as executive officer of the Commission of Immigration and Housing, contains the following statements:

"In answer to Durst's fanciful advertisements scattered throughout California, and even in Nevada, about 3,000 people arrived on the ranch within four days. They came by every conceivable means of transportation. A great number had no blankets and slept on piles of straw thrown onto the tent floors. These tents were rented from Durst at 75 cents per night, though some old tents were donated by him free of charge. Before these, and other accommodations were ready, many slept in the fields. One group of 45 men, women and children slept packed closely together on a single

pile of straw. The moral conditions of these hop fields are notoriously lax, and this camp was no exception. At least one-half of the campers were absolutely destitute and those who got an opportunity to work were forced to cash in their checks each evening to feed tent companions. There are many recorded instances of actual suffering and hunger.

"Toilets: Perhaps the most vicious sanitary abuse was that of toilets. There were probably nine of these for the 2,800 people. There were certainly not less than eight, nor more than eleven. These toilets accommodated two persons and were crude boxes placed over a hole two feet in depth. About half the toilets had no boards with the customary holes cut in them, but had a single scantling nailed across. There was no toilet inspection or cleaning. They were used indiscriminately by Hindus, Japanese, negroes, whites, women and children. By the end of the second day the seats, scantlings and floors were covered by a semi-liquid mass of filth. The stench, under the great heat, became so nauseating that many instances of vomiting have been recorded. Lines of 15 to 20 women and children frequently formed awaiting their turns at the toilet, and since dysentery had become prevalent, I have heard of instances of women humiliating themselves before passing men. Children were seen about the camp in an unspeakably filthy condition, since it was not possible for them to use any toilet without befouling themselves. It must again be noted that these facts were known to the Durst management. Many of the campers soon refused to use the toilets and began using the fields in the near neighborhood of the tents. Some of these toilets were placed in immediate proximity to the wells. There were no toilets in the fields and women were pointed out and called after as they went back among the vines. At the end of three days the fields were in a filthy condition.

"Garbage: Despite the easily forecasted garbage problem that would of

necessity arise in a camp of nearly 3,000 people, no real provision was made to take care of the garbage. Food and refuse were thrown out beside and behind the tents, and even in the paths. The toilets were used as garbage receptacles and the entrails of a sheep killed, according to report, by the Syrians, were thrown into one of the toilets. This toilet was found later to be absolutely filled with maggots. A group of families killed a sheep about Thursday or Friday of this week, and on Monday a militia surgeon saw the entrails lying beside the tent in the sun as he went there to attend a sick child. This absolute want of garbage disposal without doubt accounts for a dangerous epidemic of dysentery which had run through the camp by Saturday of that week.

"Water: The wells, probably because the water supply had been diminished by two dry years, were absolutely insufficient for the camp. Two of the wells were often pumped dry by sun-up, and the campers were forced to either go to town for water, or to distant wells among the ranch buildings. An important part of the hop field was more than a mile away from the wells, but despite the great heat of this week no water was transported to the pickers. Durst told your investigator that although they knew, as a rule, picking began on the ranch by Thursday or Friday, he never planned to have the water wagon go out to the fields until the following Monday. He gave no explanation as to the reason for this rule. The pickers during this week would be in the fields by dawn—about 4 o'clock—and about 200 to 300 children were taken into the fields with the woman. By noon, under the hot sun beating down on the still air held between the rows of vines, the children, many of whom were very small, were in a pitiable condition because of the lack of water. Numerous instances of sickness and partial prostration among children from 5

to 10 years of age were mentioned in testimony.

"Durst had let a lemonade concession to his cousin, Jim Durst, who offered lemonade in the fields during this period at 5 cents a glass. This lemonade was proven upon the testimony of the druggist with whom Jim Durst traded to have been made entirely of citric acid.

"A concession to sell stew had been sold and a stew wagon went out about noon among pickers and if stew was purchased a glass of water could be obtained with it."

These were the conditions leading up to the violent outburst of that year which caused the death and injury of a number of people, and for which two men, professional agitators, are still serving long time prison sentences. It is a picture, however, which is interesting to us now, only because it provides a basis of comparison. It is typical of a past era in this state, and of conditions which have been to a large extent eliminated. And therein lies the story of the administration of the Camp Sanitation Act by the Commission of Immigration and Housing of California.

During its session of 1913, the California legislature passed the first Labor Camp Sanitation Act. The act was approved on May 29, 1913, and went into effect on August 10, 1913, just seven days after the occurrence of the Wheatland riots. The enforcement of the act was first placed in the hands of the State Board of Health, but in the spring of 1914, by mutual consent and because of the involved problem of the immigrant, the work was taken over by the Commission of Immigration and Housing. The 1915 legislature formally transferred jurisdiction from the State Board of Health. Since April 1, 1914, the Commission of Immigration and Housing has a continuous record of camp inspection which down to date of August 1, 1920, totals 7,176 original inspections; an average of more than 1,000 per year. At

the present time our camp department staff, consisting of three inspectors in addition to the director of the department, is inspecting at the rate of more than 2,000 per year, and in addition is making the necessary reinspections to insure compliance with the commission's orders.

The Camp Sanitation Act to which I have referred, even with its amendments, is a model of simplicity and brevity, covering as it does less than two printed pages. So far the act has not received interpretation in any court of record and is unique in having accomplished so much, including over 25 criminal convictions, without having been challenged on the ground of unconstitutionality or the other usual grounds of attack.

It is remarkable that in this day of progressive legislation and of legal decisions resulting therefrom, no definition has been developed of the nature and extent of labor camps. We apparently merely assume that they are and do exist. Even our California act does not pretend to define, but merely specifies that: "In or at any camp where five or more persons are employed" certain minimum requirements must be satisfied. Those requirements, briefly stated, include the provision of the following necessary facilities:

1. Bunkhouses or other sleeping quarters sufficient to protect the occupants from the elements, kept cleanly, and located on clean and properly situated camp grounds.
2. Beds or bunks.
3. Screened and otherwise sanitary dining quarters and rooms for storage and preparation of food.
4. Adequate and sanitary toilet facilities.
5. Sanitary facilities for garbage disposal.
6. Adequate bathing facilities.
7. Appointment of "a responsible person to assist in keeping the camp clean."

The act further provides for the abate-

ment as a nuisance of any camp not properly kept, and makes all persons responsible for the presence of the camp criminally liable for failure to comply with any of its provisions.

When some of the old-time camp operators first visualized the type of camp required by law, they were astounded and fervently assured themselves, the world at large, and particularly the Commission of Immigration and Housing that such requirements were absurd. We have numerous letters on file assuring us that these "hoboes" or "these Mexicans" or "these foreigners" wouldn't take a bath if they had a chance. We value perhaps more the series of letters which came in later, admitting frankly the beneficial results of the establishment of sanitary camps; describing in detail how glad the workers were to use the facilities provided, and how much more efficient and contented they had become.

Our inspectors have worked quietly and carefully, educating the camp operator, persuading the worker to bring his complaints to us, enlisting the aid of the local newspaper, and coöperating with local health and law enforcement officers.

The steady day by day work of the camp department consists, of course, in camp inspection. Visits are made to each camp; conditions are carefully noted and full reports mailed to the San Francisco office. If the camp operator is found, he is advised personally of necessary changes. In any event, in every case a letter is sent direct from the main office signed by the executive officer. If the camp is in good condition a commendatory letter is sent out. Frequently the camp operator is sufficiently proud of his record so that such a letter finds its way into the local paper. If changes are found to be necessary to put the camp into good condition, then a detailed statement of necessary changes is mailed. Where these recommendations are not cheerfully complied with (they usually are) then reinspections are made; and in the extreme cases criminal prosecutions

are used to bring such operators into line. Local court officials, district attorneys, and the people themselves as represented on trial juries have shown themselves in wholehearted sympathy with the camp sanitation act and anxious to coöperate in securing its enforcement.

In addition to inspection work a great deal of advisory work is done by the commission's camp department and many operators now write in for directions or come personally to inquire for assistance in camp construction and maintenance.

In the performance of the schedule of work thus briefly outlined, our men find a continuous yearly cycle of work. To one unfamiliar with the variety of California's products, and unacquainted with climatic conditions in this state, the problem of labor camp sanitation may at first glance appear to be merely a short season problem. But, though many of the individual crops are harvested in short seasons, taken altogether, they provide year-round employment for the migratory army of labor, and our inspectors move rapidly through successive crops of cotton, citrus fruits, vegetables, berries, apricots, hay, barley, wheat, sugar beets, apples, prunes, peaches, hops, raisins, rice and cotton again. Add to these such more or less permanent establishments as general ranch camps including cattle ranches, railroad and highway construction camps, lumber camps, mining camps, oil camps, railroad maintenance and section camps, logging and quarry camps; and the variety and extent of California's widespread labor camp activity becomes apparent.

Today good labor camps are the rule and conditions which formerly gave rise to I. W. W.ism are no longer seriously prevalent. While it cannot be said that there are no more insanitary camps, or that the I. W. W. agitator is no longer present, it can be truly said that comparative numbers of good and bad camps are reversed today as against those of 1913, and that camp operators generally understand that the poorer type of la-

borer together with his mentor, the agitator, are to be found only in camps which do not comply with the law.

It is not necessary to tell members of the A. P. H. A. of the beneficial results of sanitary camp facilities in terms of improved health and increased labor efficiency. The old 100 per cent labor turnover which used to take place in mosquito-infested camps is a relic of the past. This is only one example of the change which has been effected in this state. As a general rule the camp operators have learned the lesson quickly, and now it is a frequent occurrence for us to give advice in the construction of permanent model camps of concrete or hollow tile where formerly nothing at all was provided.

If the physical improvement of camp conditions, with the resulting comfort of the worker on the one hand and the greater labor efficiency secured by the employer on the other, were the total results which had been secured, the Commission of Immigration and Housing of California would be entitled to the highest commendation. As a matter of fact, however, an inestimably greater result has been and is being secured. There is being built up in California as a result of and growing out of the work which I have described, a new and substantial basis for citizenship on the part of a class of people heretofore scarcely considered in the problem of government. For the changes which are being wrought in the character of camp conditions are a striking example of the efficiency of education and intelligence in governmental work. The people who live and work in these camps cannot fail to learn the lesson, when they contrast the process with the methods of violence and agitation. In the same manner a salutary lesson is coming home to the camp operators and to the general public.

Formerly the laborer nursed his grievances, listened with receptive ear to the voice of the agitator and indulged in

violent outbursts which accomplished nothing. The poor people who engaged in the Wheatland riots did not even know that the camp sanitation law which they desired had already been passed by the legislature and that the results which were promised to them by the agitators as a reward for their violence were already in the way of being secured. Today these workers are coöperating with the Commission of Immigration and Housing in improving camp conditions. Instead of bunching their grievances as fuel for agitation, they are quietly writing letters to our commission—over three hundred of them each year, informing us of bad camp conditions. Then inspections are made, the difficulties removed and a basis of intelligent and friendly participation in government is provided.

Ten years ago the camp operators were, with few exceptions, providing miserable camp conditions, fighting against a disastrous labor turnover and getting poor service. Today those operators are coöperating with us and with their men in the profitable business of building a contented and efficient body of labor. The effect cannot but be illuminating to them of the desirability, of the actual need of coöperation in the great business of citizenship, and of its first prerequisite, decent and sanitary living conditions.

Ten years ago the great uninterested public assumed that the conditions which existed in labor camps were necessarily incident thereto, that the inhabitants were unfortunate, but that there the matter ended. Today the public is interested and is realizing that in the transformation which has been brought about through the untiring efforts of the Commission of Immigration and Housing is to be found an intensely practical example of efficient administrative method.

The work of the camp department constitutes only one-fourth of the whole work of this commission. In the fields of housing, legal aid and information service, and immigrant education, in-

cluding the work of Americanization, it is performing a hitherto unequalled service in the social field. Its example and influence have not by any means been confined to this state. Commendatory letters are received from all parts of the world; the Federal government has openly encouraged the extension of such work, and during the war period looked to the commission for leadership and counsel in the labor problem of the whole northwest.

In view of the situation as I have presented it to you, it seems especially timely for the American Public Health Association to be informed that at this time political attacks are being made upon the commission and upon its president.

Let me assure you, gentlemen, that just as the example of the Commission of Immigration and Housing of California has gone far beyond the borders of this state in its effect, so in equal measure a successful attack upon it would result disastrously in the whole field of social progress.

The commission, by reason of the very nature of its work, stands in the forefront of the firing line in this pioneer work. It has doubtless been chosen for attack with the idea that it is the most vulnerable of all of California's administrative bodies; that its efforts in the uncertain fields of industrial readjustment and the problems of the immigrant make it more susceptible to the unprincipled attacks of those who are trying to drive a wedge of reaction into the body of our progressive social program.

It is your opportunity, gentlemen, to express your approval of the work which is being done by the Commission of Immigration and Housing of California and to take your stand with those who must be depended upon to save this pioneering work for California and for the United States.

Note—Since this address was given the California legislature has voted its confidence in the Commission, by a substantially increased appropriation, and the attack mentioned, has, for the present at least, been entirely abandoned.—R. J. M.

BACTERICIDAL ACTION OF WATER TREATED BY ULTRA VIOLET RAYS

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Ultra violet ray sterilization of water acts in an unusual manner. Exposure to the rays not only kills bacteria then present in the water, but more than this, there is imparted to the water a potential sterilizing power which kills bacteria subsequently added to the water.

HISTORICAL

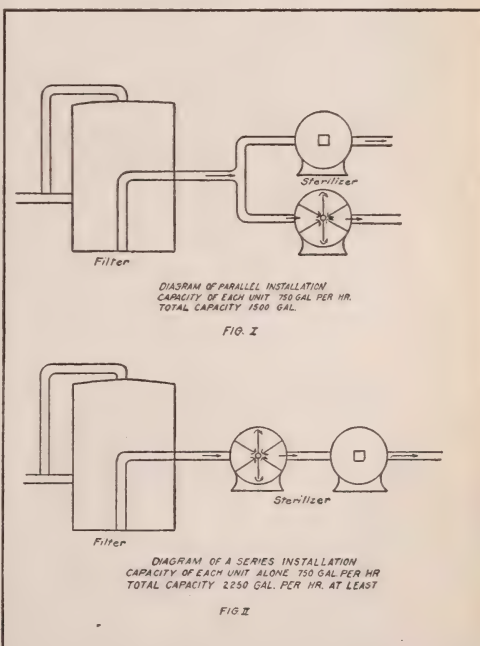
THE bactericidal action of light was first pointed out by Downes and Blunt in 1877 in a paper before the Royal Society of London. They called attention to the fact that direct and even diffused sunlight has the power of killing the bacteria of putrefaction. The most active rays are the blue, violet, and ultra violet frequencies, although the red and orange are not entirely inactive. Heat rays, however, play no part in this action.

In 1892 Professor Marshall Ward with Sir Oliver Lodge exposed culture plates to the ultra violet energy of the electric arc alone as well as to the energy of other parts of the spectrum, establishing a much more powerful bactericidal action with the ultra violet light alone.

The mechanism of this bactericidal action has been investigated by W. E. Burge of the University of Illinois, who has presented evidence to show that ultra violet radiation kills living cells by coagulating their protoplasm. That this action occurs most vigorously in the first instant of exposure is shown by Parkinson in the report of the Provincial Board of Health of Ontario in 1914. His experiment in the sterilization of water and sewage indicates that the number of organisms surviving does not bear a constant relation to the number in the influent. In fact, the result seems to be

as low with several thousand organisms as with a few hundred in the influent.

Where large quantities of water are to be treated it has been the practice for some time to use series installations of ultra violet ray sterilizers. It has been



shown by practical application that with two sterilizers of say 750 gallons per hour capacity, when connected in parallel as shown in Fig. 1, the ultimate capacity for safe treatment is 1,500 gallons per

hour. However, if these same sterilizers are connected in series as shown in Fig. II the ultimate capacity is not 1,500 gallons per hour, but is at least 2,250 gallons per hour, or more, depending to some extent on the quality of the water. If three sterilizers are placed in series a second increase in capacity of about 50 per cent is obtained.

These results lead to the conclusion that the bactericidal effect of ultra violet ray treatment does not lie alone in the direct exposure of all the organisms to the rays.

DEVELOPMENT OF RADIO-ACTIVITY IN THE WATER

A possible causative factor for the increased capacity of series over parallel installation would be the development of radio-activity in the water due to exposure to the ultra violet rays, which would exert a bactericidal effect after the water had passed beyond the range of the direct rays of the lamp. It was to investigate this possibility that these studies were made. Kreusler has demonstrated that the rays in the neighborhood of 1,860 *angstrom unit, are about 69 per cent absorbed by two centimeters of water, and that this absorption decreases with an increase of wave lengths. †Lyman states that 5. mm. of water give 100 per cent absorption of rays of wave lengths equal to 1,729 angstrom units, or less.

The quartz mercury vapor arc such as is used in the commercial type of sterilizer is particularly rich in rays of a length equal to 1,849 angstrom units, which have been shown to be particularly bactericidal. It is pointed out that in the layer of water which surrounds the lamp all of the rays of high bactericidal power are absorbed by the medium. We know from the work of the early investigators that it is the rays which are absorbed that are photochemically active.

*One angstrom unit equals one ten-millionth of one centimeter.

†Lyman, Spectroscopy of Extreme Ultra Violet Rays.

DESCRIPTION OF DETROIT EXPERIMENT

The first work was done on samples taken from the water purification plant of the Detroit & Cleveland Navigation Company boats. The installations on the steamers City of Detroit III, and the City of Cleveland III, were of the series type and sampling points were established after filtration and after sterilization, so that samples of filtered water without sterilization, and samples of filtered and sterilized water were obtained. These will be known throughout as sample points A and B respectively, A denoting filtered water, and B filtered and sterilized water.

Ten-ounce samples were collected after the sterilizer had been running at least fifteen minutes, marked with a number, and data as to their source recorded. No effort was put forth to hurry these to the laboratory. The other daily samples were collected and all taken in at one time, usually about 10:30 or 11 a. m. On arriving at the laboratory these samples were run at the same time as other water samples, usually about the middle of the afternoon, which resulted in a total holding of the samples of from three to four hours from the time of sterilization until the laboratory work was done.

LABORATORY PROCEDURE

Both sample A and B were plated in duplicate on ordinary water agars with a pH reading of 7, both 1 cc. and 0.1 cc. dilutions being used.

To a 10 cc. portion of what remained of each sample there was added one drop of a suspension of organisms made up as follows: A standard loop of a fresh 24-hour culture of a Para B typhoid or some resistant spore bearing organism was added to 10 cc. of normal sterile salt solution and agitated to break up clumps of bacteria. One drop of this suspension was transferred by a 1 cc. pipette to another tube containing 10 cc. of normal sterile salt solution and again agitated. One drop of this second suspension was added by a 1 cc. pipette to the 10 cc.

portion of each of the samples, and 1 cc. and 0.1 cc. plates were poured from them. The remainder of each sample was kept at room temperature. At the end of one and two hours respectively plates of these samples were again made in the same dilution. All plates were incubated at 37° C. for 24 hours. The media used was prepared according to the standard methods of water analysis as prescribed by the American Public Health Association in 1919, and the plates were counted in the usual manner, using a hand lens.

Table I shows the average results of a series of seven samples, using a spore bearing organism for inoculating to the samples.

TABLE I

Source	Original count	Count after adding equal volumes of suspension of spores	Count at 1 hr.	Count at 2 hr.
Filtered water sample Pt. A.	612	1928	2243	2360
Filtered and sterilized water sample Pt. B.	7	77	107	60
Average of seven series.				

The real significance is somewhat clouded by the original count. To make the result clear Table II is prepared; showing the number of organisms added and living at the 1 and 2-hour periods. These figures are obtained by subtracting the original count from the results given in Table I.

TABLE II

Source	Organisms added and living	Count at 1 hour	Count at 2 hours
Filtered water sample Pt. A.	1316	1631	1748
Filtered and sterilized water sample Pt. B.	70	100	53

The laboratory work was carefully controlled so that the technician did not know until after the plates were counted which samples were sterilized and which were not. There is no reason to doubt but that the same number of organisms was added to each sample, yet it is clearly evident that only about 6 per cent survived the exposure to the treated water, and that these tend to die out rather than to multiply. It has been stated by *Fair and others that spores, because of their

greater transparency, are more readily killed by ultra violet light than other vegetative forms. However, Para B typhoid shows a remarkably high susceptibility to the influence of treated water. Table III shows the average results of six series of samples using suspensions of Para B typhoid for inoculation purposes.

TABLE III

Source	Original count	Count after adding equal volumes of suspension of Para B typhoid	Count at 1 hr.	Count at 2 hrs.
Filtered water sample Pt. A.	1037	1160	1200	1730
Filtered and sterilized water sample Pt. B.	5	21	51	97

Table IV shows the results expressed in Table III after subtraction of the original count.

TABLE IV

Source	Organisms added and living	Count at 1 hour	Count at 2 hours
Filtered water sample Pt. A.	123	163	693
Filtered and sterilized water sample Pt. B.	16	46	92

Tables V and VI show the results of a series of 42 samples using a suspension of Para B typhoid for inoculation. In this series the water used was collected from the treatment plant in connection with swimming pools of this city. Sample A was collected from a pool having filters only, and Sample B from a pool where the treatment was by filters and ultra violet ray sterilizers, namely, at the Detroit Athletic Club. It is of interest to note in this connection that the results of filtration in each instance were very uniform, and that at the time this work was done only one of the sterilizers at the athletic club was in operation, which accounts for the fact that the count is only slightly lower than that of the filtered water from the other pool. The bactericidal action of the treated water, however, is very clearly shown. In spite of the fact that the counts are less than one hundred apart originally, after addition of the organisms, the count for the filtered water climbs rapidly, while the treated water falls to a figure below its original count.

*Gordon M. Fair. "Disinfection by Ultra Violet Light." Journal American Water Works Association. May, 1920.

TABLE V			
Source	Original count	Count after adding equal volumes of suspensions of Para B typhoid	Count at end of 1 hr.
Filtered water sample Pt. A	472	583	636
Filtered and sterilized water sample Pt. B..	378	388	233

TABLE VI		
Source	Organisms added and living	Count at 1 hr.
Filtered water sample Pt. A	111	164
Filtered and sterilized water sample Pt. B.	10	0

Through the courtesy of the James B. Clow Company of Chicago the authors were enabled to work with a small experimental plant having a filter and two sterilizers of the gravity type operating on a 110-volt circuit. Considerable experimentation with this equipment under normal working conditions of flow failed to show that any bactericidal property was imparted to the water. However, later experiments with samples exposed in petri dishes, or crucibles, for a period longer than that of normal flow showed a very pronounced bactericidal action in every instance.

In this work samples of tap water which were boiled and cooled to render them sterile and of distilled water were exposed to the action of ultra violet light from the lamp of one of the gravity type sterilizers. The average results are expressed in Table VII.

TABLE VII				
Source	Original count	Count after adding suspensions of Para B typhoid	Count at 1 hr.	Count at 2 hrs.
Tap water boiled not exposed..	0	767	695	272
Tap water boiled, exposed to U. V. R. 6 min..	0	637	389 Count after 20 min.	0 Count at 6 hrs.
Distilled water not exposed..	0	716	540	270
Distilled water exposed to U. V. R. 6 min.	0	80	3	0

In these later studies there is no initial count to confuse the results, and it is clearly apparent that under these unusual conditions of sterile water to be treated, the added organisms die out rather rapidly. However, those in the treated water undergo a more rapid reduction. The same laboratory technique was employed throughout.

It seems significant from this work that the bactericidal property is dependent upon the energy input into the water, that is, a high voltage for a short exposure, or a low voltage and longer exposure will accomplish the same result. A number of impulses of short duration at a high voltage seem, however, to accomplish greater bactericidal action than a longer exposure and a lower voltage, and of one exposure only.

CONCLUSION

It seems quite reasonable to the writers therefore to conclude:

1. That the exposure of water to ultra violet light emitted from a quartz mercury vapor arc, imparts to the water a definite residual bactericidal property, which effects a reduction of at least 85 per cent of the organisms subsequently added.
2. That the ability to impart this property is dependent upon the energy input into the lamp, and the time of exposure of the water.
3. That the usual pressure type of sterilizer operating on a 220-volt circuit develops the bactericidal property under ordinary working conditions.
4. That this property is accentuated in series installations.



HEALTH INSTITUTE

The next issue of the News Letter will describe the Health Institute to be held in New York City one week before the Annual Meeting. Watch for the News Letter!

FUNCTIONS AND RELATIONSHIPS OF BUREAUS OF CHILD HYGIENE AND BUREAUS OF PUBLIC HEALTH NURSING IN STATE BOARDS OF HEALTH

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Does the organization of a child hygiene bureau mean the absorption of every function of a state board of health and an application of the same to children under fifteen, in other words, the creation of a health department for children within the regular state board of health? The writer of this article thinks it should not involve this and suggests a plan to avoid duplication.

AMONG the problems of organization which confront state health officers is the immediate need for a clear cut and convincing analysis of the functions and relationships of the nurse as a factor in public health. Such an analysis should point the way to logical organization of bureaus of public health nursing, define their status with relation to other bureaus and particularly with relation to bureaus of child hygiene.

The functions of the state board of health are defined by statutes which create that body and as a rule these functions are delegated to bureaus which assume the administration of legal health regulations. In some instances bureaus are created by legislative fiat, in others by action of the board of health in accordance with powers conferred upon it by the legislature.

An analysis of the activities of every state board of health bureau may be made under these headings:

- (1) *Operative.*
- (2) *Educative and Advisory.*
- (3) *Provision of Technical Service.*

In fulfilling operative functions a bureau is charged with the administration of certain provisions of the health law. In its educative or advisory capacity it is concerned with the spread of health information, the establishment of desirable standards in health work and the stimulation of public and professional interest

in definite phases of constructive health activity. In providing technical service supported by tax funds, the most progressive and costly means of health conservation known to science are furnished to citizens who need it, at a nominal cost to the individual taxpayer.

It is desirable that non-operative bureaus be given an assured status by legislative recognition of their educative, advisory and service functions as a public necessity, but they should be given a wide degree of freedom and initiative in carrying out their purposes and should be unhampered in their efforts to fit the service of science to social needs.

The bureau of vital statistics is predominantly an operative bureau concerned with the administration and enforcement of the law for the gathering of vital statistics. Its educative and advisory function is secondary and the public service offered is chiefly that of furnishing statistical tabulations which serve as a basis for constructive health programs. It also furnishes to individuals upon request copies of statistical records.

The bureau of epidemiology exercises an operative function in administering the regulations for control of communicable diseases. It has also a heavy responsibility in education and furnishes certain clinical service or equipment for such service in preventive measures.

The hygienic laboratory is almost ex-

clusively a technical service bureau although its indirect effect upon the public has a distinctly educative value, and it may pursue its function in accordance with broad general policies fixed by statute.

A bureau of inspection is operative mainly in administering legal regulations for the control of environmental sanitation, the sanitary supervision of food supply, public eating places and public buildings. Educative results are secondary.

The bureau of engineering has an operative function to the extent to which it is given control of water supplies and sewage disposal plants by legislative decree. Its further function lies in the field of technical service and advice of experts.

A bureau of county organization exercises all three of the functions here defined in approximately equal proportion.

With this analysis in mind it is easy to place a bureau of public health nursing where it logically belongs, that is, as one exercising an educative and advisory function, occasionally providing technical service in demonstration, never participating in the administration of legal health regulations, although frequently enjoying legal recognition of its educative and advisory function in stimulating the development of a technical service.

It is believed that the value of the nursing bureau will be seriously curtailed whenever it is required to participate in or is closely interwoven with the operative functions of the state board of health or of its bureaus. Its chief value lies in its acceptability in the home and in the school, this value can best be conserved when permitted to function somewhat exclusively in its own field, avoiding participation in less popular health control activities.

An attempt to define or limit the functions of a bureau of child hygiene presents a problem of greater complexity. Is the function of the child hygiene bureau an operative one or is it mainly

educative or advisory? Does it offer a scientific service to state agencies public and private or to individual citizens? Dr. Talaferro Clark, Surgeon U. S. P. H. S., in a recently published discussion of "The Present Day Needs in Child Hygiene," outlines an all-inclusive program under the following headings:

Prenatal Care:

Infant Care:

Securing active registration of births.

Establishing infant welfare stations.

Promoting measures for the care of babies in the home.

Employing public health nurses to instruct mothers.

Safeguarding the milk supply by establishing and supervising private and municipal pasteurization plants and by other measures.

Enacting and enforcing laws to prevent blindness in the new-born.

Preschool Age:

Establishment of health centers for examination and advice regarding physical condition and proper feeding.

Attention to communicable disease control.

Adequate follow-up work including demonstration in the home.

The Child of School Age:

Require sanitary school buildings.

Provide teaching of health habits.

Detect and correct health defects including sight and hearing.

Detect and control communicable diseases.

Instruct in general and personal hygiene.

Instruct in food habits with relation to growth.

Medical examination of every school child once a year.

Medical examination of school children about to leave school.

Mental examination to determine and prescribe more suitable teaching for unusual children.

Supervision of Environment:

Recreational facilities.

Prevent and correct faulty seating, illumination, ventilation, heating and sanitation.

Coöperate with parents in maintaining a sanitary home.

Coöperate with local health and educational authorities to promote physical education, to secure clinical facilities for treatment, to secure establishment of open air or special classes in schools including hot lunches in city and country schools.

Child in Industry:

Insure sanitary surroundings.

Protect from exploitation such as would undermine health.

Secure medical supervision of children in industry.

Physical examination of children about to enter industry.

Periodic examinations thereafter.

The Mental Health of Children:

Mental examination to determine the mental status of retarded or handicapped school children, the feeble-minded, the juvenile delinquent.

Neglected and Dependent Children:

Wider investigation to determine the special types of dependency due to specific handicaps.

Note the relationship of dependency to specific physical defects such as:

Deafness following scarlet fever or other communicable disease.

Blindness and mental defects following venereal diseases of parents.

Tuberculosis occurring in insanitary homes and associated with lack of care, illiteracy, etc.

This is manifestly a program for a complete health department for citizens under 15 years of age and those who are expectant mothers of future citizens. The various activities of such a bureau of child hygiene will duplicate certain definite interests of every functional bureau of the state board of health. It has a tendency to absorb the entire bureau of public health nursing and in certain instances more firmly established bureaus, such as

vital statistics, epidemiology, sanitary engineering and county organization.

What is to be the end? It would seem that the logical result of successfully carrying out this program will be the gradual absorption of the entire state board of health and a redistribution of its functional activities with especial reference to their application to children in natural groupings such as infant, including expectant mothers, preschool, school, industrial, feeble-minded, dependent and delinquent types.

A number of vital social forces have contributed during the past three years to the rapid development of special health activities for children. The revelations of the draft boards based upon records of physical examination of men called to military service; the activities of a Children's Year Program initiated in 1918 by the Federal Children's Bureau; demonstrations in organization of field work conducted by the United States Public Health Service in coöperation with state boards of health; lay interest and lay investigation fostered by child welfare divisions of the Women's Committee of the Council of National Defense; these and many others have combined to lift the weight of age-old apathy and neglect and to bring an awakening of public conscience which demands a square deal for the child.

It is in response to this demand that bureaus of child hygiene have been organized within 30 or more of the state boards of health. These agencies in their haste to organize, to achieve a program and to secure results have apparently devoted little thought to an analysis of the functions and relationships of these bureaus.

It is my purpose to present here two possible interpretations of the function and relationships of a bureau of child hygiene and to indicate what seems to me, the logical place of the nursing bureau with relation to each.

(1) The bureau of child hygiene may exercise an operative function founded upon a basis of legal authority to admin-

ister health protective measures in the interest of citizens under 15 years of age and to expectant mothers. It would include the authority to organize local units in counties or towns and to administer the activities of these units with such participation by local health authorities as is provided for under the laws of the state or a voluntary committee or council might contribute such service as is thought desirable.

The appropriation of ample funds and the availability of sufficient medical and nursing personnel are prerequisites to the effective execution by a Child Hygiene Bureau of such an operative function. The development of activities within local units will meet as its first great determining factor the requirement that its program be completely harmonized with the interests of local medical service as a public necessity, of the first magnitude. This consideration and others which are less fundamental would seem to preclude the possibility of successful direction by other than a doctor of medicine. Nursing service and popular support of intelligent lay opinion will become an integral part of every such unit in operation.

Should a bureau of public health nursing be organized as a sub-division of a Child Hygiene Bureau operating as outlined above? I believe that it should not, for the following reasons:

(a) The operative function is in itself incompatible with the free exercise of the advisory function by a subordinate bureau.

(b) The tendency would be to limit the expression of opinion by the experts employed in the subordinate bureau to the matters which are of interest to the management of the affairs of the bureau in control and to deprive other bureaus of the state board of health and private agencies within the state of the advantages of consultation with these experts.

(c) A further tendency of this plan of organization would be to limit the function of the bureau of nursing, to *pro-*

vision of *technical service* for child hygiene activities.

(d) It seems clear that a nursing bureau which has become a purely technical service bureau upon which heavy demands are sure to be made, will inevitably be hampered in its efforts to fit the scientific service of nursing, in a broad general way, to social needs.

(e) When the nursing bureau is the rival of none in administration, this fact tends to make it acceptable to all in the office of consultant; conversely, the identification of the bureau of public health nursing with an operative function will tend to place it under suspicion with all operative bureaus whose functional activities are duplicated by it in its program for children.

(f) A child hygiene bureau which exercises operative functions will duplicate the activities of so many of the other bureaus of the state board of health that a nursing bureau controlled by it will be rendered unacceptable in its normal relationship to those bureaus.

(g) If a child hygiene bureau organized along operative lines is the form to be followed I believe it will prove less objectionable to permit such a bureau to operate its own corps of nurses distinct from the bureau of public health nursing which should zealously maintain its educative and advisory function.

(h) It is doubtful if such a child hygiene bureau would find its corps of nurses able effectively to correlate its nursing activities with those of other public and private agencies. It might find the unhampered service of a bureau of public health nursing which is free to exercise the function of consultation and advice as advantageous to it as to other agencies or to the state board of health.

It is surely no more inconsistent for the child hygiene bureau to build up its own nursing service for child welfare than to operate in the fields of rural sanitation and epidemiology as they affect children or to control milk supplies and other food products in the interest of

children, or to enforce the law providing for the registration of births, all of which are the legitimate functions of other bureaus.

If, as I believe, the above plan of organization of a child hygiene bureau is illogical and unsound, if it is accepted or tolerated merely upon grounds of expediency because of the great need for an agency which will lead the way and demonstrate the application of our traditional health protective functions to those groups of our citizenry which have been most grievously overlooked, then the more completely it is permitted to pursue its operations unhampered the more quickly will come the denouement. We shall then know whether the child has swallowed the parent and redistributed its functions or the parent has reinterpreted the functions of the child and given it a place which is not inconsistent with its own continued existence. Such a reinterpretation might take the form of the second possible plan which is here presented:

(2) A bureau of child hygiene may be one which exercises an educative and advisory function never participating in the administration of health laws except as a consulting or service agency; its office is to show functional bureaus of the state board of health and local health agencies public and private, how their functions may be most effectively applied to children in the separate groups to which the natural lines of cleavage assign them; infants including expectant mothers, preschool children, school children, children in industry, children in institutions, the mentally deficient, the neglected, the delinquent. It may apply itself to the stimulation of child welfare activities to be undertaken by local health agencies, public or private, and furnish

technical service upon request so far as its means will permit. It may engage in special studies and investigations in coöperation with local health agencies and voluntary groups placing before those interested an interpretation of the findings of its research work.

This interpretation of the child hygiene bureau is so nearly identical with that which has been accepted for the public health nursing bureau and the character of the advice and service likely to be in demand is so similar that it does not seem inconsistent to place these two activities under common direction. Inasmuch as the operative function in health activities as applied to children will under this arrangement always be in the hands of medical directors of the operating agencies it does not seem inconsistent and is frequently expedient to place the combination, child hygiene and public health nursing bureau under the direction of a nurse. Lay direction should be avoided but lay participation should be provided for through a voluntary council or committee.

There are a number of child hygiene bureaus in the United States which have been developed according to either our first or our second interpretation of function. It is far too early to speak with conviction as to which of these will prove the most effective or the one to endure. Prophecy is idle but common sense prompts us to believe that state boards of health will in the not far distant future confine their operative functions within bureaus which have a universal application to men, women and children; that bureaus which provide advice of experts in special health problems or in applying functional activities to special age-groups will be held strictly to their office of educative, advisory and technical service.



The A. P. H. A. is planning for a great Health Exposition in Madison Garden in connection with its Fiftieth Annual Meeting in New York City, November 14-18, 1921.

THE VALUE OF THE PUBLIC HEALTH NURSE IN PUBLIC HEALTH AND WELFARE ADMINISTRATION

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Read before Public Health Administration Section, American Public Health Association, at San Francisco, Cal., Sept. 15, 1920.

The newly developed possibilities of the public health nurse have helped change the aspect of public health administration. Trained, sympathetic women are a force in home health education. They have fields in prenatal work, the preschool age, in school inspection and follow-up and in the industries. Their duties begin with conception and end with the grave.

BEFORE one can properly appreciate the value of the Public Health Nurse in health and welfare administration, one must be able to visualize the possibilities of public health administration. One must have a proper conception of what modern public health service should include. If we are going to keep abreast with truth, we must permit new conditions to teach new duties.

It seems but a short time since the principal activities of a department of health were the abating of nuisances and the cleaning up of back yards and lanes. Then with the advent of the science of biology came the new light on the germ origin of disease and how these germs were transmitted from one person to another, and how this transmission might be controlled, and now those who are able to visualize the possibilities of preventive medicine, as we see it today, fully realize that the control of communicable disease constitutes but a fraction of the work of a modern department of health, and to limit one's activities to the abating of nuisances and the possibilities of control of communicable disease, one would be but tinkering with the greater problem.

If we interpret properly the lessons

of the war that we have just passed through, we cannot but feel that probably the greatest by-product of that war has been the revelation to the various nations of the weakness of their physical assets. It has been aptly said: "The medical examination of our men for war has revealed what a devastating and murderous thing our peace was and is." "You cannot make an A1 nation out of a C3 population."

When Lloyd George read the report prepared by Sir Auckland Geddes and Sir James Galloway, and their Commission, on the findings of the Medical Examination Board of Recruits under the Conscription Act, he, in a subsequent address in Manchester, in August, 1918, among other things, said that if Great Britain had been looking after the health of her people for the past 25 years as she should have been, they would have had a million more men to put in the field in 1917, and that the Germans would never have reached Amiens, and the war would have been over months before it was.

Dr. Eugene Lyman Fisk, President of the Life Extension Institute in New York, after a careful review of the medical reports of recruits in the United States, might well have said, "I

told you so," but he didn't. He was not surprised, however, at the results, inasmuch as his experience with the Institute in the complete physical examination of large groups of supposedly healthy persons, actively engaged in their every-day vocations, showed that over 50% were suffering from some physical defect that required them to consult their physician or surgeon. So that he was quite prepared to find from 30 to 40% unfit for service.

Then let us look at the results of the physical examination of children on entering school. In the various cities of the United States and Canada where a complete physical examination has been made of children in the first class, they have found over 50% suffering from some physical defect requiring them to be referred to their family physician or to some clinic for correction, and with the exception of tuberculosis and syphilis, practically none of these defects, either in connection with the army recruits or with the Life Extension, or with the complete physical examination upon entering school, could be attributed to communicable disease.

With these percentages of physically unfit, presented to us by the examining boards in connection with our recruits and with the Life Extension, and with the schools, are we going to profit by these valuable by-products of the war, or are we going to sit by and remain in a rut and "burk" the reports, as England did in 1904 after the Boer War, when a similar revelation was made.

Of those rejected, over 25% were the result of under-nutrition, or under development, and 50% were rejected for defects that should have been detected and corrected on entering school.

It must be apparent that if we properly interpret these findings, there is only one solution for the problem, and that is that departments of health must embrace in their administration all activities essential for the developing of the best type of man timber. In other

words, departments of health must realize the fact that they are nation builders. Surely when nations have found it advisable to educate the child, they must also find it imperative to develop and maintain the best physical condition of which that child is capable. In order to do this, we must begin where eugenics leaves off. That is, as soon as possible after conception takes place.

The first link in the activities is prenatal care; secondly, the care of the mother and infant at birth and for the first year following; thirdly, care of the child in the preschool age; fourthly, the medical, dental and nursing service rendered to the child in the school; and, fifthly, the care of the boy and girl and the man and woman when they enter the various industries, when they become the breadwinners, a national asset rather than a liability.

These activities are all essential to make a nation fit for war, and they are also essential to make our nations fit for peace.

What we require to do is to control the controllable diseases, and have repaired physical defects, and not to attempt to control only communicable diseases.

The public health nurse has made these activities possible. In fact, I judge of the fitness of an organization and an administration of public health by its organization of public health nurses.

The pendulum has swung from the environment to the individual, from the objective to the subjective. It is inconceivable to me how any administrator of public health could think he was discharging his duty when he was confining his activities to an attempt to control communicable diseases. It would look as if he placed some special value on a life that might be sacrificed from communicable disease, as if it probably belonged to the elect. Personally I cannot see the difference. I cannot see the justification for attempting to safeguard human life against communicable disease

and neglecting to safeguard human life against any preventable disease.

It is rather irritating at this stage of the game to hear people talking about "police powers" in public health administration. It is like ministers talking about hell fire. Surely public health is not such a bitter dose that we have to hold a club over the people in order to have them do those things which are essential to safeguard their own health and lives and the health and lives of their offspring. The quicker we supplant the police powers by education, the quicker we will attain that which is essential to attain in order to develop a fitter ace.

What is essential is that the knowledge we possess and the knowledge which has been for years kept for the most part within the precincts of universities and laboratories be democratized and so translated that it can be easily assimilated by the man on the street.

The results of the activities of the department of health in prenatal care, the care of the mother and infant, the care of the child in its preschool age, the supervision of the child in the school, and of industries, depends for the most part on education. Through the medium of the public health nurse, therefore, it has been made possible for us to educate the mothers, the children, the boys and girls, the men and women, through these various channels. The activities, therefore, of the public health nurse, in public health and welfare administration of today, embrace practically all of the activities that mean life saving and disease prevention.

First, there is the prenatal work, with instructions in personal hygiene in the prenatal stage, which is urgently required, as demonstrated by the fact that approximately 30% of the deaths of infants in the first year, occur in the first month, and most of these, therefore, are due to prenatal or natal causes. The public health nurse visiting these prenatal cases gives instructions and advice in reference to bodily care, food, dress,

housing, fresh air, ample exercise, and for the necessary preparations for the arrival of the expected baby. Also, the importance of an early and systematic examination by a physician is emphasized.

Secondly, there are infant and child welfare clinics. Contact with the newborn babies and their mothers is kept up through the medium of the infant and child welfare clinics. The nurses recommend that the babies be taken to the nearest clinics for periodical medical examinations. These consultations are conducted in 21 child welfare centres in Toronto, by specially trained voluntary physicians, assisted by the public health nurses. The infants are systematically weighed and measured and careful record of their progress is kept. An expert medical examination is made and advice is given in the care and feeding of the child.

These clinics are not limited to infants, but are now made available for all children below the school age, and where it is not possible for the mother to bring these children, they are brought to the clinics by our nurses, or examined in the home by physicians from the well-baby clinics. If physical defects are discovered in any of these children, they are at once referred to the hospital clinics or to their family physician for treatment. In this way, not only the infant or child mortality is materially reduced, but also many physical defects are corrected before they become irreparable and before the child enters school. The average annual attendance at these clinics is between 15,000 and 20,000.

The next activity in order is that of the nursing service in the schools. When medical inspection of schools was first instituted, it was thought that it was practically a physician's job, but the fact soon revealed itself that without the nurse to do the follow-up work, it was like diagnosing and not treating.

School medical service is provided in

92 of our public schools and 26 separate schools, the total number of pupils being about 97,000.

In connection with school children the nurse has three main functions: to prevent epidemics, to discover remedial physical defects by having all suspected cases referred to the school doctors, and to educate the children in personal hygiene.

Inasmuch as the salary of the physician is practically double that of the nurse, we have relegated to the nurse all the activities that are possible for her to do in order to relieve the physicians. She is never permitted, however, to attempt to make a diagnosis or give treatment. In this way, the physicians are enabled to spend their time in doing those things that demand their special skill.

This service of the nurse applies also to the dental inspections of the school children, where the nurse performs a similar function.

The great bulk of the health educational work in connection with the schools is done through and by the public health nurse. Her services are also called into requisition in connection with the Health Leagues and Little Mothers' Classes. These courses consist of 11 lessons and are given to girls from the Junior Fourth Class, selected by the Principal of the school. The interest shown by these girls in their instructions as regards the care of the infant has so materially increased that the enrollment is now practically double what it was at the beginning. Nurses requiring to do this work and also the educational work in connection with the schools have taken special instructions in pedagogy.

Practically all emergency work in the school falls upon the nurse, such as simple dressings, which are quite within her scope. The handling of pediculosis, which we all know is lamentably prevalent, is looked after entirely by the nurses.

Then we have the nurse in industry.

We have been able to demonstrate in a very satisfactory way the value of the nurse in follow-up work in the various industries by having our nurses visit the absentee civic employees. This can be more economically accomplished by our nurses than in any other way, inasmuch as the city is already divided into eight district nursing centers, and cases of sickness of employees are referred from the various departments to the central office, and the information telephoned to the district in which the absentee is living.

In addition to the foregoing, the public health nurse provides all bedside nursing required under the Workmen's Compensation Act for civic employees injured in the discharge of their duty.

Then there are the tuberculosis clinics, in which the education of the nurse is probably called into requisition more than in any other of her activities. The chief problem, as we are all aware, with tuberculosis, is to teach the patient how to live in such a way as to improve his own chances and not to be a source of danger to those about him.

The public health nurse visits cases of pulmonary disease with the permission of the reporting physician, and gives valuable instructions and assistance. There are approximately 10,000 visits made by our nurses in connection with this tuberculosis work every year.

The nurse also provides for special medical diagnosis and treatment for those who cannot afford to employ a physician. The Associated Tuberculosis Clinics are operated in the various teaching hospitals in connection with which our nurses supply the nursing and follow-up work. The social service work is also done in connection with the various sanatoria.

The Public Health nurse conducts the social service work of all the public hospitals excepting the Toronto General Hospital, which had organized its Social Service Department before the Department of Health undertook hospital social

service work. In every large hospital is stationed a nurse whose chief duty is to interview the free patients, whether they be in the hospital or merely attending the clinics, and to have visits made to the homes of those to whom she believes the district nurse can be of service. Frequently there are matters that the nurse can arrange for the patient that will set the patient's mind at rest. Often the home conditions are in some measure responsible for the illness, and the correction of these with the help of the Social Agency prevents further trouble. In many cases treatment can be continued in the home with the aid of the public health nurse, which otherwise would require a longer stay in the hospital.

In her social service duties, the nurse ascertains in all these cases, whether or not the revenue of the home is sufficient and if not, the case is referred to the nearest social agency, for reinforcement.

The Venereal Disease Act which has recently come into force, requires the confidential delivery of certain notices. This is accomplished by the public health nurse, and it is only when the party cannot be found that the assistance of the police is called into requisition.

Every public health nurse in connection with the Department in Toronto has a small section of the city in which she alone visits the homes where the need of health instructions and assistance is most evident. In many ways she learns of the need of her visits—by birth registrations, hospital reports, child welfare clinics. She is directed to homes where the problem of the caring for the newborn baby is the all-absorbing topic. The child welfare clinics, day nursery inspection and the school medical inspections point out to her the homes where the task of keeping the child in health can be made easier by her assistance and advice.

The hospital extension work, con-

ducted by the public health nurse, provides for the entry to many homes from which the patients have been removed and to which they hope to return. It is the nurse's task to arrange for home conditions that will not favor a relapse.

Physicians' notifications of cases of tuberculosis and applications for free hospital treatment indicate the homes where instructions and assistance are important to protect the members of the household and others from the spread of the infection.

Innumerable other means could be mentioned by which the public health nurse learns where she can be of service. Her teaching has the great advantage of an object lesson, for she goes right into the home and shows how the necessary thing can be done with the facilities available. She must be not only a teacher and nurse, but also a trained social worker. Frequently it is impossible for the people to follow her instructions because of financial stringency or some other social problem. For instance, it is fruitless for a nurse to advise a tuberculous patient to sleep with open windows if he has insufficient bedding and insufficient fuel. In such a situation her duties are the study of the social aspects of the case and the referring of the case to the proper social agency, and to see that adequate action results.

The total number of homes visited by our public health nurses last year was more than 125,000.

The foregoing are the most outstanding activities of the public health nurse in a modern public health administration, and in these and many other ways such nurses are helping the people to help themselves to live healthier lives and to develop better men and women. In fact, the duties of the public health nurse in public health and welfare administration, begin with conception and end with the grave.

HEALTH TEACHING AND THE SCHOOL HEALTH PROGRAM

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Health teaching in schools where the interest of the pupils was directed towards their own health conditions resulted in large health gains to them. Control classes lacking this incentive gained much less. The author suggests uniform health programs in schools as a part of the government machinery.

IN the wave of increasing interest in public and personal health which now seems to be gathering energy all over the country, one of the most potent influences for future good has been partly overlooked or at least it has not yet been given its due weight or significance. I refer to the health teaching in the public schools. In many states the law has required that a certain amount of time should be spent in studying the effect of alcohol and narcotics or special phases of physiology, but up to the present time, even when hygiene is taught, mere information has been given, and very rarely have there been examples of teaching which have had the desired result of training the child for healthful living.

It is obvious that the fundamental ideas of the conduct of life as well as the basis of general education are obtained for the greater part in the grade schools. At this period the mind of the child is most receptive, the power of observation and logical deduction most free from external influences and the belief in what the teacher says most implicit. Here is the time then when fundamental facts regarding healthful living are most likely to fall into fertile soil, and consequently this is the place where health education should be most seriously undertaken.

The following story tells the actual accomplishment in an experimental class for health teaching and training which

has been so practical and so promising for the future that it seems worth while to present it for perusal and discussion.

Through the kindness of Supt. Clark and Principal Knight of Somerville, and with the assistance of Miss G. B. Collins and other teachers of the Cutler School, it has been possible for me to conduct an experimental class in health teaching from September to March of the present school year. Our fifth grade pupils were given a half-hour period each week when the reason for some health habit was discussed and a second half-hour when a follow-up lesson was given by an experienced teacher. In order to translate into the life of the child the health habits which were under discussion, each pupil kept a daily record with respect to two or more habits, keeping a record for a two week period for each item. The children were weighed and measured monthly and the weight chart with gains or losses recorded was kept hanging in the schoolroom.

The children also made scrapbooks on the subject of health by drawing or clipping pictures to illustrate stories or facts learned from the instructional material. The motion picture was used with excellent results, but unfortunately there are very few suitable pictures available at present. In motivating the child, these activities are most important, for the mere acquiring of information has been

shown to have no effect in improving the way of living. Classroom instruction with stories and discussion of the "why" of health habits, the recording of gains, and special projects did interest the children with the result here recorded.

Of the 39 children in this class, 13 were more than 10 per cent under normal weight at the beginning of the year. Each of *these* children had a 15 minute talk with the health teacher at which time the child explained its daily program for the preceding 24 hours in such a way that the teacher could determine what fundamental health habits were being neglected. Because the boys wished to become more athletic, and because the girls wished to become more attractive, they eagerly undertook the correction of unhygienic habits. Difficulties commonly found included hurried eating, the use of tea and coffee, improper food, the lack of certain types of food or of water in the diet, lack of sleep, irregular bowel habits, too much study outside of school, too much excitement, straining the eyesight, and the neglect of the teeth. Where the school doctor's examination showed physical defects the parents were urged to take the child to a physician, but in the experiment no medical work was conducted and nothing was attempted which could not be carried out by a teacher well trained in personal hygiene.

The following table shows that the children made a decided gain in health through the period under investigation at a time when working hard on their studies. For purposes of comparison with the experimental group, statistics from two other groups of equal size were se-

cured from other grades in the same building. Both of these grades are being taught by experienced teachers of excellent qualifications who are interested in the subject of health and, although having no regular health training, both grades received encouragement in healthful living together with an occasional lesson in hygiene. Although the children in the control groups have fairly good health records, the contrasts in the following table will show the advantage of systematic health teaching. While the experimental group (A) is of fifth grade children, the first control group (B) is a class of sixth grade pupils who were in much better health to start with than the experimental class. Group C, a second control, is a class of sixth grade pupils which is more comparable to the experimental class so far as health conditions were concerned, but unfortunately records for this group are available only for the last four months of the study. All weighings were made with the children in school clothes and while the adding of heavy clothing in winter would make an increase in recorded weight, the three groups are comparable in this respect. Comparisons with normal weight were taken in house clothes without shoes. It should be remembered that the control groups have been given some health teaching.

The improvement in the class was general and not at all confined to the group of underweight children to whom special advice was given. It should further be stated that this special advice was limited to one, or at most two, conferences, and that the experiment is primarily a test of classroom instruction which arouses

TABLE SHOWING RESULTS OF HEALTH TEACHING

	Experimental Group A		Control Group B		Control Group C	
	No. of Pupils	% of Class	No. of Pupils	% of Class	No. of Pupils	% of Class
Pupils correct weight or over, September.....	8	20.5	20	47.9	..	....
Pupils correct weight or over, March.....	25	64.1	25	59.5	8	25.0
Pupils 10 per cent underweight, September.....	13	33.3	4	9.5	..	....
Pupils 10 per cent underweight, March.....	5	12.8	4	9.5	11	34.4
Average per cent of normal gain.....	204%		162%		139%	
Average per cent of normal gain, underweight group...	192%		149%		142%	
Pupils who made less than normal gain.....	1		9		16	

the interest of the child in improving his own health.

The accompanying chart shows the weight record of Anna N. who made the most rapid improvement, gaining at the rate of 406% until she reached the normal weight for a girl of her height and age. Her principal hygienic defects which were promptly corrected were: lack of building foods, fruits and vegetables in the diet; the drinking of tea and coffee; and irregular bowel habits.

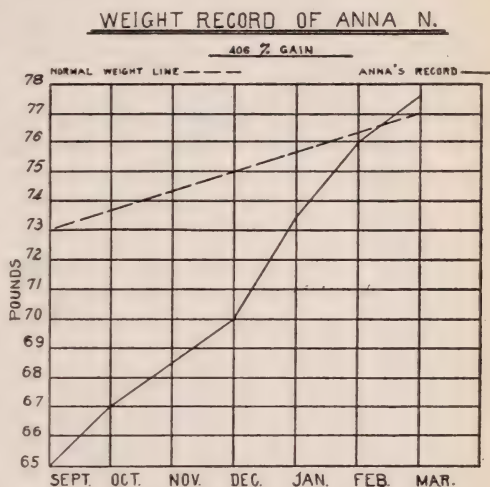
At the time of my second talk with Mary R., she used this expression: "I know I weigh more than I did because I've been attending to it."

Now Mary was only eleven years old, one of the underweight children. That expression, however, not only voiced Mary's confidence in herself, but also struck the keynote in the possibilities of health teaching. Her confidence was justified; she did gain when she attended to it, and the experiment here recounted proves that when health habits are so taught as to interest the pupils in *paying attention* to health there will result a valuable, definite, and measurable health improvement.

But this article is not a plea in behalf of health teaching as a panacea for all the health defects of the school population. It would be most unfortunate if such an experiment placed undue importance upon health teaching. What we need is a unified health program for the school system. Local enthusiasts and specialists or private organizations have in various communities demonstrated the value of special measures: here, diet classes; there, a mouth hygiene program; elsewhere, a posture clinic; and somewhere else, a Health Crusade with knights, squires, and pages. These things were good, their results have been commendable; work of the utmost value has been contributed by individuals and by private organizations, but the time is at hand when we should gather up all of this experience and adopt as a part of our governmental machinery a unified

school health program which will embrace all of these worthwhile activities.

Such a program may be grouped under six headings.



1. Every community should adopt such plans as are now being considered by the most progressive of school superintendents, and establish a sane, complete and unified program of health teaching, prescribing the work to be done in each grade in such a way as to eliminate the tiresome repetitions and serious omissions so common in the system where each teacher gives her grade what she chooses. The work in the early grades should be training in health habits. It goes without saying that subject matter



These children were more than 10% underweight. Most of them were out of the underweight group when the picture was taken.

and methods should be up-to-date, practical, and scientific.

But who is to do this work? The present grade teachers generally have had little or no training in hygiene and health teaching while in the Normal School. School nurses who teach health often lack a knowledge of the art of teaching, and an appreciation of the relation of the special subject to general school work. Physical training teachers have not had enough pedagogy or general hygiene, and dental hygienists naturally restrict their teaching to mouth hygiene. Many young women from each of these groups are doing good, but isolated, health teaching; and it is to improve the quality of this work that a course in Methods of Health Teaching is being offered at the Massachusetts Institute of Technology this summer.

Ultimately, I believe, we shall have a special health teacher who might be called a Health Supervisor. She will have all the necessary training in each of the above mentioned branches and will supervise and unify all the health work for the group of schools consigned to her, relying upon the grade teacher for a part of the teaching in each room. At present there are few people with complete training for this work and we should not wait for them to be trained, but rather use the personnel already available, making them responsible for as much of the program as they can take care of and allowing them to complete the training as they have opportunity.

2. The medical service should include a thorough physical examination of the

child upon entering school and at regular subsequent periods. The examination should be made by a conscientious and well qualified physician with public health perspective, and sufficient school nursing service should be provided to follow up special cases and secure treatment by the family physician, dentist, or oculist, or at private or municipal clinics for the correction of defects in eyes, teeth, posture, nutrition, etc.

3. The prevention of communicable diseases must be secured by the medical and nursing machinery in the school system properly correlated with the public health administration.

4. School sanitation should provide rooms, buildings, and grounds without any threat to the health of the child.

5. A program of physical education which will build up a strong body with proper coördinations should be established.

6. Attention should be given to the health of the teaching force by the establishing of proper courses in hygiene in Normal Schools and by the encouragement of vigorous and healthful living during the school year.

All of these activities are a part of the school health program. We draft our children into a compulsory education system. Should not the school and health authorities in every community join forces and organize the best possible school health machinery and try every practical and well tested device for building up the health of the school population?



SPECIAL RAILROAD RATES

The next issue of the News Letter, appearing August 12th, will contain information concerning special railroad rates to the Annual Meeting. Mailing Clerks sometimes discard second class envelopes. Insist on receiving your News Letter!

MEASURING RODS OF INFANT MORTALITY

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A study of the vital statistics of infant mortality gives evidence that, irrespective of place, year or class, there are three determinable and measurable constituents of the varying rates. Such practical measurement would seem an evaluation of the relative importance of methods of combat.

THE study of results from rural investigation of infant mortality gave evidence that the predominant content of such mortality lay in the two types of disease, namely, infant diarrhea and the respiratory communicable diseases.¹ Municipal observations on the control of communicable diseases had pointed to the possibility that congenital malformations, prematurity and debility, as a cause of excessive deaths, were susceptible of analysis in terms of the same two types of diseases.²

A study of those extensive statistics of all England relating to infant mortality,³ and of some recent statistics of New Zealand,⁴ offer, I find, the evidence for corroboration.

The authors of the investigation referred to in England,³ show that there are two different types of deaths. "The first type consists of deaths due to developmental factors which vary but little from place to place, year to year, and class to class, and appear to be caused by fundamental influences which we do not fully understand and at present seem unable to control. The second type consists of deaths mainly due to respiratory diseases and enteritis caused by influences in the post-natal environment, most prevalent in crowded, smoky, industrial and mining districts, and probably entirely preventable." The authors further show that the end of the first month is a fairly sharp line of division between the two, 75 per cent of all deaths in the first

month being due to developmental conditions, after which the general mortality is part and parcel of the general mortality of childhood, due apparently to the same causes and demanding for its reduction, the same measures. Mindful of the fact that the respiratory diseases have a cyclic frequency, which I have shown is reflected in the infant mortality rate, we find that the statistics for all England reaching as far back as 1881 show such influence during three waves, the pandemic of 1892 on, a wave in 1904 and one for 1911 (statistics are through 1914). There are also shown the following facts:

- (a) that the urban rates are in apparent proportion in terms of respiratory and diarrhea frequencies,
- (b) that the slight excesses under age 1 month, as well as over 1 month, of districts are in terms of variations of those mentioned diseases,
- (c) that the slight excesses in social conditions of parents under age 1 month may, like the larger excesses over age 1 month, be so referable.

If these possibilities are deducible from the statistics, there should be rather definite correlation between these three factors, namely,

1. "Bed rock" first month irreducible.
2. Respiratory diseases.
3. Diarrheal diseases.

The following table is taken from the article mentioned,³ as illustrative of the

extremes of urban and rural conditions, and is given for reason of future reference in comparative data.

PATHOLOGICAL CAUSES OF INFANT DEATHS, 1914

Deaths under 1 year per 1,000 births.

Cause of Death—	England and Wales	County Boroughs of North	Rural Districts of South
Total respiratory diseases..	25.65	35.03	13.86
Pneumonia	10.40	14.03	6.01
Bronchitis	7.75	10.76	4.69
Whooping-cough	4.38	5.31	2.14
Measles	2.14	3.77	.27
Pulmonary phthisis.....	.35	.43	.29
Other respiratory diseases	.63	.73	.46
Diarrhea and Enteritis....	17.37	23.54	6.11
Developmental conditions..	35.97	39.42	28.84
Other diseases	25.63	31.78	16.72
All causes	104.62	129.77	65.53

I have roughly computed that if we place the figure 25 as the irreducible constant, that we may use the figures 1.23 as the constant for infant diarrhea and the figure 2.3 for the constant for the total respiratory diseases, mindful of the proviso that such relate to the statistics of the work mentioned,³ and also that they are roughly calculated after the manner of a student of practical epidemiology rather than with the mathematical precision of a biometrist, for, after all, we are concerned with what may be of practical use in health measures.

Applying our correlation figures to those mentioned in the table and others given in the article, we arrive at the following figures of infant mortality.*

	Actual figure	Correlated
England and Wales, 1914...	104.62	105.3
Rural districts, 1914.....	65.53	64.4
North county, 1914.....	129.77	134.5
North Scotland, 1914.....	67.08	68.1
England and Wales, 1911...	130.0	130.9
England and Wales, 1912...	95.0	95.1

With the exception of the North county boroughs, the correlation figures are satisfactorily close: the discrepancy may be shown later under consideration of the statistics of the United States.

With the most recent article at hand having to do with New Zealand,⁴ a table giving the mortality rates by cause of death, with reference to those that we would have to deal with, are in terms of epidemic diseases, tuberculosis, respiratory diseases and gastric intestinal dis-

eases. There is no way of separating from the epidemic the content that, respiratory in character, would be analogous to those of England, nor to separate from the gastric intestinal diseases the content that is other than diarrheal. That such is practically immaterial during the past ten years of low communicable disease rates in New Zealand is shown by the following figures when the entire epidemic, tuberculosis and respiratory rates are used for the respiratory, and the entire gastric intestinal for the diarrheal rate:

	Actual rate	Correlated
New Zealand, 1895-9.....	82.7	91.9
New Zealand, 1900-4.....	76.3	83.8
New Zealand, 1905-9.....	69.6	75.6
New Zealand, 1910-4.....	57.2	58.9
New Zealand, 1915-8.....	49.3	49.7
New Zealand, 1918.....	48.4	49.1

The comparison between all England and New Zealand becomes then as definite as those comparable rural areas of England where disease statistics are given. Were similar statistics given of those rural areas of Ireland where the infant mortality rate is lower than the lowest rate of New Zealand, yet stronger evidence might be adduced. There is no evidence that the irreducible of England has been touched by New Zealand either. If our correlation figure is of value, it would show that the higher recorded rate of 1918 may be due to unrecorded births in New Zealand. This factor will be taken up later.

Without a knowledge as to whether the pneumonia of English statistics refers to all pneumonias, with the knowledge that the American practitioner often increases the pneumonia list as a primary cause of death and even leaves out the real primary as a secondary, namely, scarlet fever and diphtheria, with no knowledge that "other respiratory diseases" listed under the total English table has a content of influenza, with a knowledge from the text that scarlet fever and diphtheria are not listed as respiratory in the English statistics, there may be much of error in the application of our constants to American statistics. However, in the cause of possible

*Example of obtained correlation figure: England and Wales, 1914, infant mortality rate, 104.6: $1.23 \times 17.37 + 2.3 \times 25.65 + 25 = 105.3$.

results, and leaving the finer points to be corrected and refined by those who have access to the data of pure biometry, I have included the following diseases as respiratory for comparing with American statistics: Lobar and broncho-pneumias, bronchitis, whooping cough, measles, pulmonary tuberculosis, and influenza. Diarrhea and enteritis of the English statistics being represented by the same classification of the American statistics. The following table shows the rates as gained from the records of the Census Bureau, Birth Statistics, 1919:

INFANT MORTALITY RATES, UNITED STATES,
1919, ACTUAL RATES FROM BUREAU
OF CENSUS

	Actual rate	Correlated rate
Total registration area	86.6	88.7
Total registration area, males...	95.8	94.6
Total registration area, females...	77.0	82.6
Total registration, cities, total...	89.3	91.7
Total registration, cities, males...	98.3	97.2
Total registration, cities, females...	79.3	85.4
Total registration, rural, total...	84.1	85.8
Total registration, rural, males...	92.9	88.7
Total registration, rural, females...	74.7	79.8
Massachusetts, cities, males....	99.4	99.4
Massachusetts, cities, females....	79.3	87.1
Massachusetts, rural, males....	89.5	92.1
Massachusetts, rural, females....	73.3	76.1
Vermont, cities, males.....	157.1	146.6
Vermont, cities, females.....	80.6	98.8
Vermont, rural, males.....	86.0	97.0
Vermont, rural, females.....	71.6	75.9
North Carolina, cities, males....	135.7	121.3
North Carolina, cities, females....	111.1	99.7
North Carolina, rural, males....	89.0	67.1
North Carolina, rural, females....	73.6	70.9
South Carolina, cities, males....	151.6	122.3
South Carolina, cities, females....	126.5	99.7
South Carolina, rural, males....	119.8	102.5
South Carolina, rural, females....	101.3	91.2
Minnesota, cities, males.....	79.6	66.1
Minnesota, cities, females.....	59.0	54.6
Minnesota, rural, males.....	74.7	74.3
Minnesota, rural, females.....	57.6	65.8
California, cities, males.....	69.5	50.5
California, cities, females.....	58.5	47.1
California, rural, males.....	86.1	64.3
California, rural, females.....	70.9	59.9
New York City, males.....	90.5	92.3
New York City, females.....	71.7	81.7
Baltimore, males	111.9	108.1
Baltimore, females	82.5	94.8
Minneapolis, males	74.7	67.8
Minneapolis, females	54.2	46.9
San Francisco, males.....	70.5	69.3
San Francisco, females.....	51.9	58.3

A study of the table shows that as a whole, the total registration area gives a slightly higher correlation figure not excessive for rough work, but analogous to the higher similar rate for the county boroughs of the north of England, that the same higher rate is shown for the totals of the cities of the total registration area or for that of cities and rural, the male content figure is remarkably the same or a bit less than the actual rate.

As remarkable is the constancy of the similar correlation figures for the female content higher than that of the actual rates. There is then the possibility of reconciling the larger correlation figures over the actual rates when there is no separation of sexes, as due to the excessive content of the female over the male content. The constancy with which there is always and everywhere, wherever the two sex figures are given, a predominant rate of infant mortality for the male is worthy of consideration. There is a possibility that such a difference lies in the content of the "bed rock" irreducible constant. Investigation of the census statistics would seem to make it reasonable that while the figure 25 holds for males, that a constant of between 6 and 8 less for females is to be considered. The exact figure is left to the biometrist. By using the constant 25 for males and 19 for females, not only do we bring the corrected correlation rate for females to the similar exact or near exact figure of the actual rate as with males, but we bring into line as well, the slight excess of the correlation figure over the actual for the rates where the separation of sexes is not made.

If we sample states and cities as of types which have had registration for years, or otherwise; as of types which are widely divergent in climate, in short, in all health problems; consideration of those listed would, I believe, be a fair sample. Not making claim as we have stated for such accuracy as would make an explanation necessary in Massachusetts as to a 2.6 excess of correlation rate, rural males, over the actual, it is conceivable that as a rural consideration, there might even in that state be a content of unreported deaths, when our figures are reduced to the accuracy of biometry. The same holds for Vermont as more marked than with Massachusetts. North and South Carolina were taken for comparison with the two previous states by reason of the high excesses of malformation, prematurity

and debility over the other states. We have seen from our English statistics and conclusions that such are very constant year by year, place by place, and class by class. The correspondence of high correlation in Massachusetts and the large cities which have no such abnormal content shown by their vital statistics, whereas the two states under consideration do have such abnormalities, would seem further evidence that the excess of malformation, prematurity and debility are referable to respiratory and diarrheal diseases. Taking up the content of such excesses brings the correlation rate into line with the actual rates. There is one further point of importance: the correlation rate for males, rural, South Carolina, are with such correction yet low. The vital statistics show that of all states and of all areas, that rural males of that state have a content of infant mortality from unknown causes five times the highest recorded for other states. There is further correction possible, even in terms of respiratory and diarrheal diseases. The last two states, Minnesota and California, are taken for reason of low rates from infections, from general conditions as may make them comparable with, for example, New Zealand, the one variation being that vital statistics are, so to speak, in their infancy in the states taken. These states and the cities given in those states, show in general, low correlation rates as compared to the actual. Here again, contrasting the records of San Francisco as compared to

the state, there would seem the possibility that the actual higher rates of the state are measurable in terms of the content of absence of birth registration. The very definite agreement of correlation and actual mortality rates of the general registration area in all of its subdivisions, of the states and cities where vital statistics are dependable for reason of the years of enforcement, would seem to make such premises more than suggestive.

In sum: There would seem evidence that the 25 per cent of, or greater mortality of the first month, in excess of an irreducible constant, is, irrespective of place, year or class, determined by the amount of respiratory and diarrheal diseases, and that such continues as the factor after the first month: there would seem to be possible, determinable constants as would not only measure the variable mortality under age 1, but would be of value as (a), an index of the completeness of birth registration and (b), the localization of irresponsible treatment of the respiratory and diarrheal diseases, as shown by excessive rates of malformations, prematurity, debility, or of unknown causes, and (c), there is evidence that the irreducible constant varies between the sexes.

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Intensification of the Fight Against Malaria in the Roman Campagna.—An extensive program for the suppression of malaria in the Roman Campagna was proposed by Comm. Galletti of the Royal Civil Engineering Corps at a recent meeting in Rome of representatives of the city and national health organizations interested in the sanitation of the malarial zones in the Cam-

pagna. It was decided to intensify the fight against malaria by quinine prophylaxis at Fumicino, Ostia, and in other centers of infection, under the direction of Professor Grassi and Professor Fermi. The financial burden is to be borne by the city of Rome and through contributions from other civil organizations interested in the work.—*L'Italia San.* No. 5, Feb. 20, 1921. (E. C.)

MARITIME QUARANTINE A CONSTRUCTIVE HEALTH AGENCY

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Quarantine usually implies delays and consequent monetary loss. It is a novelty to find these potential delays used as a health agency. This has been done at Panama by getting ports to better their health conditions through the business proposition of immediate release at the canal of vessels coming from satisfactorily cared for places.

THE quarantine system of The Panama Canal is now operating on a unique plan, tending to minimize delays. It is based upon the assumption that through its quarantine the Canal can largely influence the sanitary policy which all nearby ports will follow, at least regarding the yellow fever and to a certain extent regarding plague, which are the only major diseases that menace this part of the world.

Formerly a yellow fever quarantine was in force against all the ports of Central America and Mexico and against the nearby countries of South America. The quarantine required that vessels wishing to transit the Canal must have been away six days from the last of these ports, and

must wait at anchor, if necessary to complete the period, before they would be released from quarantine. This meant that all passengers on such detained vessels had to put in time on the ship or at the quarantine station until six days had passed, although some came from ports only one or two days distant from the Canal. In 1918, 91 vessels were held a total of 154,176 net ton-days and 8,436 passengers were held 38,169 days. These figures do not represent the entire loss of time, for many captains were in the habit of coming to the Canal at half speed to save fuel and shorten the long delay at anchor. In 1919 some modifications which lessened the delay to vessels were made and yet in that year 79



Pacific Ocean and entrance to the Panama Canal. The trestle to the right leading into the water is the Quarantine landing.

vessels were held a total of 161,376 net ton-days and 8,980 passengers were held 18,570 days.

It is difficult to estimate with accuracy the money value of these delays, but I have been satisfied to consider an average net ton worth 50 cents a day and on this basis the direct loss to shipping was \$77,088.00 in 1918 and \$80,688.00 in 1919. A large majority of our passengers are business men traveling first class so that \$5.00 a day is too low a value for their time, but on this basis their loss was \$190,845.00 in 1918 and \$92,850.00 in 1919. These are the direct losses. When we think of how the development of all quarantined ports is throttled and present and future business is thus lost to the Canal and the world, we realize that the indirect losses are far reaching and may be much greater.

These expensive and annoying delays, this throttling of development, were all justified under the old system. Yellow fever was known to exist at one or two points in both South and Central America and from these could at any time infect any of the nearby ports in direct communication with the Canal ports. The blanket quarantine which thus takes equal precautions against all ports in certain zones has become firmly established, but that it was unsuitable for the Panama Canal—the business of which is the expeditious passage of ships, with the expansion of its business depending to a great extent on the development of Latin American countries—was evident, provided it were possible to adopt a safe method which should be without the objectionable features of delay.

The new plan was simple enough. It was to go to each quarantined port and say in effect "We realize how the delay of passengers and vessels hurts your business; our outlet to the world is through the Canal, and yet many travelers will not come here, and but a few small vessels, and these charge high rates because we quarantine them when they get to the Canal. We are satisfied that

you have no yellow fever now, but that it is simply your good luck, for you have an abundance of yellow fever mosquitoes and a case from the interior may start an epidemic at any time. We quarantine against you because you do not protect yourself by the very simple process of reducing your yellow fever mosquitoes to such a low point that the disease will not spread. If you will employ inspectors to do this work as we will outline, we will remove the quarantine. This will protect your own people and pay for itself in that way many times over. After the work is organized as we direct we would like a weekly report and some one will come around at least every six months to see how you are getting along."

As usual, the first plans were more complicated than necessary. It was intended to have a permanent inspecting board that would travel at least nine months of the year, covering the important territory every six months. They would investigate, make friends, and indicate what work should be done to get a modification or removal of quarantine. Coöperating with the local governments or the International Health Board, they would see the work started and maintained. Although the shipping interests that enthusiastically supported the scheme immediately offered free transportation for this board, it was found that an extra expense of \$12,000 to \$15,000 a year would be unavoidable. Lacking such an appropriation, the idea of a board had to be dropped. It was then decided that the Chief Quarantine Officer or one of the Quarantine Officers detailed by him should make the visits. All of the territory with the exception of the Pacific coast of Colombia, has been covered once.

Independently, Dr. M. E. Connor of the International Health Board and Dr. Henry Hanson of the Comisión Sanitaria de Perú, had been working on yellow fever in Guayaquil and in northern Peru, respectively, with brilliant results. Their efforts were promptly recognized by the

removal of the quarantine at the Panama Canal after the visit of the Chief Quarantine Officer. This immediately put a commercial value upon the yellow fever work which it had never had before, and will keep always before the business interests the necessity of continuing the work.

The detention of passengers from the Atlantic ports of Colombia, where there have been no known cases of yellow fever for ten years, was suspended after inspection of those ports. In Central America quarantine was removed from Punta Arenas, Costa Rica, after the authorities had complied with the sugges-



Ancon Hospital and Grounds.

tion to employ two inspectors for anti-mosquito work in the town. This was needed to protect Costa Rica from Salvador and other infected places and in turn to protect the Canal. A similar mosquito inspection was put into operation at Corinto, Nicaragua, with the understanding that quarantine would be maintained against all of Nicaragua except Corinto, and that time spent in that city immediately before sailing counts on the six days' quarantine period.

A great saving to vessels was effected by cancelling the rule that vessels lying at the wharves at La Union, Salvador, and Corinto, Nicaragua, should anchor in the bay at night. This rule had been made because mosquitoes might be breeding on the wharves. The personal instruction that has been given those in charge of these wharves should avoid this possibility. A continual check on their work is made by trapping for mosquitoes on the vessels on their arrival at the Canal.

At present there is very little delay at the Panama Canal on account of quar-

antine. The attached table shows the monthly average of traffic and the delays during the years 1918, 1919 and 1920 to date. It will be seen that the amount of traffic through the Canal is steadily increasing, while the delay to ships and passengers on account of quarantine is rapidly decreasing. The average monthly quarantine losses in ton-days, passenger-days, and estimated cost in money, for 1918, 1919, 1920 to September, June, July, August in 1920, and for August, 1920, is compared in Table I:

Under the development of this system and as each country realizes that it can herself control the matter of quarantine at the Canal, the remaining delays on account of yellow fever will be abolished because the ports interested will do anti-mosquito work at least until the menace of yellow fever is removed from the Western Hemisphere. Until this time the Health Department of The Panama Canal is doing its share by keeping below the danger point the yellow fever mosquito index on the Canal Zone, both as an example to others and as the best yellow fever insurance.

TABLE I

	Monthly Average				
	1918	1919	1920	June, July and August 1920	August 1920
Total tonnage received.....	964,406	1,209,393	1,809,343	2,125,318	2,000,329
Net ton-days detained.....	12,848	13,448	10,529	None	None
Total passengers received.....	2,875	3,822	5,530	6,301	6,395
Passengers detained.....	703	746	960	348	195
Passenger-days detention for yellow fever....	865	1,490	1,631	894	434
Passenger-days detention for plague.....	36	40	59	.....	.....
Passenger-days detention for other diseases....	12,280	17	2339	16	25
Total passenger-days detention.....	3,181	1,547	2,029	910	459
Loss to vessels at 50c a ton-day.....	\$ 6,424	\$ 6,724	\$ 5,264	.....	.....
Loss to passengers at \$5 a day.....	\$15,905	\$ 7,735	\$10,145	\$4,550	\$2,295
Total direct loss in money.....	\$22,329	\$14,459	\$15,409	\$4,550	\$2,295

¹Mostly meningitis suspects.

²Mostly influenza suspects.

The Program for the Fiftieth Annual Meeting of the A. P. H. A. plans for the Sectional papers, papers before other associations, a Health Institute and a Health Exposition. Four reasons why you should attend! New York City, November 14-18, 1921.

PRACTICAL LABORATORY DIAGNOSIS OF TYPHOID FEVER

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Laboratory methods for the diagnosis of typhoid fever have not heretofore been considered as possessing the same degree of reliability as the methods used for certain other diseases. It is believed by the author that by proper standardization and coördination of the several recognized tests, the laboratory diagnosis of this disease can now be placed on a thoroughly satisfactory basis.

IN 1896 when Widal stated that he had found serum to contain active agglutinins after four months dessication he probably had no conceptions of specimens of blood dried on pieces of glass, wood, metal, paper, etc., such as wend their way into many diagnostic laboratories today. The valuable test bearing his name has certainly come to be much abused.

As far back as 1909 unsatisfactory results obtained by the "Widal test" were discussed in the writer's first annual report as city bacteriologist. This test was then carried out by us, as is still done in most laboratories, with a dried drop of blood. Physicians constantly complained of our inability to obtain positive reactions in cases that were clinically true typhoid fever. As many physicians would not report a case of typhoid fever without a positive Widal reaction our results caused the health department considerable annoyance. At this time experiments were made with various strains of typhoid cultures, with various methods, different lengths of time, etc., but in spite of these efforts we never succeeded in making the test a satisfactory one either to ourselves or to the physicians.

During an experience of nearly twelve years in public health laboratory work, the Widal test has continued to be a

source of constant annoyance. The conclusion was early reached, however, that the test is unreliable, difficult to carry out properly and that the results are apt to be misleading to the practicing physician. As soon as this conclusion was reached we began at once to seek for some laboratory method of diagnosing typhoid fever which would fill the need.

In 1910 with the help of two physicians some experimental work with blood cultures was carried out. These experiments proving satisfactory, we began in 1911 to try to put this test into practical use. The first actual test which was carried out is still fresh in our minds. The culture obtained gave growth of a typical pneumococcus, and when this result was reported to the physician we found that the patient had died and that a death certificate for typhoid fever had been made out. The change in diagnosis which was made as a result of this culture gave our health department one less death from typhoid fever, and thereby convinced the department of the advantage of the blood culture.

The blood culture constantly increased in popularity and from 8 cultures which were made the first year, the work has progressed to the extent that the city laboratory has in some years done more than 300 cultures. During the past year (1920), which has been exceptionally

low in typhoid, 182 blood cultures have been examined. The most gratifying feature of the work this year has been that the practicing physicians themselves have taken most of these cultures, while in previous years a large proportion of all the cultures had to be taken by the medical inspector of the health department. Another pleasing feature has been that nearly all these cultures reached us in good condition and, as the table of results shows, a very small percentage have had to be reported as unsatisfactory. Our present blood culture outfit is the result of several trials and is, we believe, entirely practical and satisfactory. This outfit now consists of two bottles of media; one of peptone bile (plain ox bile to which 1% peptone is added) and the other of beef-infusion bouillon containing 1% of sodium citrate and 9/10% salt. We believe that the use of these two media assures us that any organism, likely to be found in the blood stream, will be grown. The following summary does not represent all blood culture work done by our city laboratory, but only that part of it which has been under the immediate personal supervision of the author up to January 1, 1921.

Summary of 388 blood cultures made in routine municipal work:

296—negative.

78—positive.

14—unsatisfactory.

The positive cultures were as follows:

62—typhoid.

5—streptococci.

4—para-typhoid B.

2—pneumococci.

2—unidentified bacilli, probably paratyphoids.

1—hemolytic, Gram-negative bacillus, unidentified.*

1—meningococcus.

1—influenza bacillus.

Having obtained these satisfactory results in municipal work we felt that something of the same sort in state work would be highly desirable. As we could

not find a satisfactory mailing container for our two-bottle outfit, and as the bouillon is so easily contaminated anyway, we concluded to send out only the bile in our state outfit. This outfit has not been in use long enough in our state work for us to be certain of its ultimate success, but the first few months of its use indicate that it is at least a great improvement over anything that we have previously tried. Up to the present time we have had 42 blood cultures sent in from outside of Richmond. Sixteen of these cultures were positive for typhoid, 25 negative and only one so contaminated as not to permit of a satisfactory examination. Several of these cultures, including two that were positive, were not submitted in our regular containers, but were simply tubes of blood. The cultures in these cases were made by putting the blood clot into the bile media. While we do not think it likely that as many positives would be obtained where this clot method is used as would be obtained when the blood was inoculated directly into the media, yet we do believe that a tube of blood submitted in this way, permitting as it does both the macroscopic agglutination test and the blood culture, gives on the whole very satisfactory results. For the country practitioner, with the difficulties that confront him in sterilizing syringes, etc., we think it probable that the Keidel tube will prove the most practical method; the next best being to draw one or two cubic centimeters of blood from the ear or finger.

Our present method of handling blood cultures in the laboratory is to incubate them for a period of from 12 to 24 hours, inoculating slants of Russell's double sugar media from the bottles, usually twice. Direct examination of the bile itself has never proven satisfactory. If the growth on Russell's media shows a Gram-negative bacillus, we try at once the agglutination test with typhoid or para-typhoid serum as the reaction on the media indicates. If this agglutination test is negative we then inoculate various sub-cultures to aid in the identification of

*This organism was not a contamination, as three different cultures proved its presence.

the organism. One of the most annoying difficulties that we have had to encounter are those of organisms, which in spite of the fact that they showed the cultural reactions of the typhoid bacillus, will not agglutinate until they have been on media for several generations. In these cases we make a preliminary report to the physician and follow it later by another more definite report. In spite of all of our efforts, an occasional culture is found that cannot be identified. Contaminations worry us much less now than formerly; whenever we find contaminations present, the simple procedure of plating from the bile on to Endo media makes the isolation of the typhoid bacillus comparatively simple, even when the original culture is rather badly contaminated. This, however, delays the report a day or more.

A feature that has interested us particularly is the almost complete failure of the typhoid bacillus to grow in the bouillon bottle while it always grows in the bile, the blood apparently exercising an inhibiting effect in the bouillon while the bile counteracts this inhibition. We have only carried out a little experimental work on this, so far, but these results seem to indicate that the inhibiting properties are not present in the blood of either normal or vaccinated people, at least where the blood is added first and the bacilli afterwards. In a blood culture, of course, the two are added simultaneously. Blood of an individual, however, who had had typhoid one year previously prevented the growth of *B. typhosus* in 1 to 2½ and 1 to 5 dilutions, but not in 1 to 10.

Next in value to the blood culture comes the macroscopic Widal test. For the past year and a half we have used this test in our routine municipal work, having discontinued entirely the microscopic test with the dried drop of blood. We hope in the next year to make the same changes in our state work. This change has proven entirely satisfactory and has met with almost no opposition on the part of the physician. Most of them

are now accustomed to drawing blood for a Wassermann test anyway, and do not object to going into a vein as much as they did formerly. When the case has progressed too far for the blood culture to be reliable, we then advise this test. We also enclose a tube and a blank for this test with every blood culture outfit. In a good many cases, especially in the second week of the disease, we get both tests positive. Frequently, however, we get only one or the other. In the first week of the disease we very seldom get a positive agglutination test, while after the second week of the disease, it is not uncommon to get a positive agglutination test with a negative blood culture. When the two tests are used in conjunction, we believe that a false negative report is very seldom made.

Comparative tests by the macroscopic and microscopic methods were made on 40 specimens of blood with results as shown in the following table:

Macroscopic Test	Microscopic Test		
	Positive	Negative	Atypical
Positive	18	7	4
Negative	22	..	20
Atypical .....	..	..	..
Total	40	7	24
			9

To summarize these tests as shown above:

The macroscopic test gave 18 positives out of the 40 bloods examined while the microscopic gave only 7. Of the remaining 11 positives by the macroscopic method, 4 would have been reported negative and 7 atypical if the microscopic test alone had been relied on.

Of the 22 negatives by the macroscopic method, 20 were negative by the microscopic method and 2 were atypical by that method.

The macroscopic method gave typical tests in 9 bloods which were atypical by the microscopic method, showing 7 of these to be positive and 2 negative. No specimen had to be regarded as atypical by the macroscopic method.

These comparative tests of the macroscopic and microscopic methods were made on 36 vaccinated persons (mostly recent, but some old and some who had as many as 4 series of vaccinations), on

one person who had had typhoid one year before, and on three persons giving negative histories. While these comparative tests were thus not made on bloods from cases suspected of being typhoid, there is no reason for believing that there would have been any difference in the outcome if they had come from such cases.

The microscopic tests were made from dried drops of blood, checked by two or three workers, but made in the usual routine manner. All macroscopic tests which were called positive agglutinated well in 1 to 100 and, in some cases, in dilution as high as 1 to 3200.

We are inclined to think that the danger of misleading results due to previous vaccinations has been frequently overestimated. Where a series of dilutions is set up and no reaction called positive unless the agglutination is distinct in a dilution of 1 to 100, or higher, the chance of error in any but those who have been repeatedly vaccinated, or else vaccinated within a few months, is, we believe, slight.

The following table shows that a single vaccination a year or more ago does not usually give a positive agglutination but repeated vaccinations may give a positive result even though the last one was two years ago.

SHOWING AGGLUTINATION TESTS ON 25 PERSONS VACCINATED 1 YEAR OR MORE

Number of times vaccinated	No. of years since last vaccination	No. of persons	Result	Titre
7	1	1	+	100
4	1	1	+	100
3	2½	1	+	800
3	2	1	+	100
3	2	1	0	...
2	2	2	0	...
1	1	1	+	200
1	1	1	0	...
1	2	11	0	...
1	3	2	0	...
1	4	2	0	...
1	5	1	0	...

Of these 25 tests only 5, or 20%, were positive, 4 of these 5 having a history of more than two series of vaccinations. In only one of these cases was the titre over 200.

Contrasted to this, 25 known cases of typhoid, not especially selected but taken as they occur in our files, show the following agglutination titre:

Titre	Number of cases
8000	1
1600	4
800	6
*400	4
400	6
200	2
100	1
50	1
Total.....	25

The above table shows that the titre of the agglutination is an important part of the test and that it usually runs much higher in a case of typhoid than it does as a result of vaccination.

Stool and urine examinations are undoubtedly of value in certain instances and should be available when needed. One case which occurred recently will serve to illustrate. A positive agglutination was obtained at 1-400. The case had been running for several weeks so that a blood culture was not indicated and the patient gave a history of having been vaccinated one year before. The value of the agglutination test was therefore doubtful, as was also the clinical history of the case, but obtaining the typhoid bacillus from a rectal swab clinched the diagnosis.

This paper does not attempt to set forth anything strictly original or new but merely to emphasize certain points from the standpoint of a public health laboratory.

First. The dried drop Widal test should be discontinued as it is unreliable and more misleading than helpful.

Second. The blood culture is a very valuable test, not only for ideal conditions as are found in a hospital, but also as a regular routine procedure. It has proved entirely feasible in municipal work and will probably prove so in state work where the specimens are not received so promptly.

Third. The macroscopic Widal test is simple, practical and reliable. When used in conjunction with the blood culture we have a laboratory procedure which will seldom if ever mislead. This test should be a part of every diagnostic laboratory.

Fourth. Stool examinations should be available when needed.

*Not run higher.

TESTING OF ANTISTREPTOCOCCUS SERUM

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Read before Laboratory Section, American Public Health Association, at San Francisco, Cal.,
September 16, 1920

A satisfactory method for the standardization of antistreptococcus serums depends upon the determination of definite species and their etiological relationships to certain pathological processes. Such serums would undoubtedly be more efficient if prepared by injection of fewer types and used only against the organisms which these types represent.

THIS paper is presented for the purpose of recording the results of a few experiments made to determine the protective properties of antistreptococcus serums against certain types of *Streptococcus hemolyticus*; also to point out the difficulties involved in the standardization of antistreptococcus serum.

Several related unsolved problems present themselves in any attempt to standardize antistreptococcus serums. The potency of antibacterial serums cannot be determined, even roughly, unless the organisms used in the test represent adequately defined species. In case of the streptococci, where the different species are either grouped under one all-inclusive name, or separated upon an unsound basis, classification becomes at once an important question. The streptococci represent one of the largest groups of the pathogenic bacteria, and in spite of the numerous classification schemes presented, none is adequate for the purpose of serum control. Morphology has been given but little consideration, though it cannot be ignored in this case, since very definite morphological differences do exist. Pathogenicity has likewise helped but little, except in certain groups coupled with hemolytic activities or powers of fermentation.

According to the reactions in media containing blood, the old, inclusive spe-

cies of *Streptococcus pyogenes* has been separated by a number of workers into several varieties, or species, the most prominent being *S. hemolyticus* Rolly¹ and *S. viridans* Schottmüller².

Kligler³ presented a correlation of agglutination and fermentation reactions, giving no weight to hemolysis. He concluded that: "The agglutination tests show that a division of the streptococci on the basis of hemolysis is not warranted, whereas a separation according to the fermentation reaction appears to coincide more closely with their natural relationships."

Holman⁴ first prepared a logical scheme of classification according to reactions on blood agar and the fermentation or nonfermentation of the carbohydrates lactose, mannit, salicin and inulin in serum broth. His first broad division is into hemolytic and non-hemolytic groups, then lactose and non-lactose fermenters, with subdivisions into mannit and non-mannit fermenters, and, finally, a subdivision into those that do ferment salicin and those that do not.

Brown⁵ in his classification according to hemolysis on blood agar, states that

¹Centralbl. f. Bakt. Abt. 1, Orig., v. 61, 1911, p. 92.

²Munch. Med. Wochenschr. 1908, 1, pp. 848 and 909.

³J. Inf. Dis. V. 16, 1915, p. 327.

⁴J. Med. Res. v. 34, 1916, p. 377.

⁵The Use of Blood Agar for the Study of Streptococci; Monograph No. 9, Rockefeller Inst., N. Y. 1919.

the scheme proposed by Holman should be extended and rearranged, and that his "alpha, alpha prime, beta and gamma types" of hemolysis on blood agar should be recognized instead of dividing all streptococci into hemolytic and non-hemolytic groups. Brown places all green-producing and brown-producing streptococci (also the pneumococci) in his alpha type. Under his beta type are placed all streptococci producing no discoloration on blood agar, and forming sharply defined, clear, transparent, completely hemolyzed, colorless zones 2 to 4 mm. in diameter. The deep colonies of the alpha type are complex or bi-convex (asteroid or lobulated) while the beta type deep colonies are always simple and bi-convex, never complex. His alpha prime type in appearance is intermediate between the alpha and beta types. It differs also from the beta type in fermenting raffinose. In his gamma type he places all streptococci whose colonies on blood agar produce no hemolysis and no discoloration.

The second difficulty involved is that of the uncertainty as to the etiological connection of any particular species or group of streptococci with a particular pathological process. In determining this the agglutination reaction might be useful, but unfortunately it cannot be applied to all streptococci. Individual members may be selected, but invariably a few are found by all workers to be unsuited for this test. This is due largely to the fact that so many strains exhibit spontaneous clumping and settle out, leaving a practically clear, supernatant fluid when grown in the usual nutrient broth, and also to the fact that they often show non-specific agglutination.

Dochez, Avery and Lancefield⁶ approached the problem of type specificity from two directions, agglutination reactions and the animal protection test. Their report deals entirely with *S. hemolyticus*. None of the cultures which they studied ferments inulin and about 20%

ferment mannit. This latter characteristic was shown to have a relationship to the immunological classification of these organisms. Their work resulted in the determination of 4 biological types which they have designated S3, S23, S60 and S84.

In our study of the standardization of antistreptococcus serums all of the organisms used have been those which may be termed *S. hemolyticus*, defined as producing definite hemolysis (beta type according to Brown) on 5% rabbit blood agar plates, rarely producing methemoglobin, fermenting maltose, lactose and salicin, not fermenting inulin. Four strains only fermenting mannit. Gram positive. Capsules not very frequently demonstrated. Morphology rather definite, *i. e.*, cocci in chains of varying lengths. The individual cocci comprising a single chain vary in size from very small almost spherical forms to large bulbous and irregularly shaped bodies; characteristically the pairs in these chains are compressed at right angles to the long axis of the chain, rarely a rod-like form will be present in the chain adjoining the large bulbous forms, but no long chains of rod-like or diptheroid types have ever been observed in any medium, nor under varying conditions of oxygen tension. These diptheroid types are frequently seen in the non-hemolyzing methemoglobin producers.

In our early experiments the cultures were selected according to the above definition. They were isolations from empyema, arthritis, puerperal septicemia, mastoiditis and erysipelas. After the publication of the work of Dochez, Avery and Lancefield,⁷ their types S3, S23, S60 and S84 were included in the experiments. The cultures were very kindly furnished by the Rockefeller Institute. All of the cultures were passed through mice or rapidly transferred in a favorable broth medium until of such virulence that 1 billionth of a cubic centimeter would kill a 15 to 20 gram white

⁶J. Exp. Med. v. 30, No. 3, 1919, p. 179.

⁷J. Exp. Med. v. 30, N. Y. 1919, p. 179.

mouse within 96 hours. A number of rabbits were immunized by injecting intravenously, at first killed or attenuated, finally living organisms. The serums of these animals, along with a number of commercial serums, were tested against the highly virulent cultures of streptococci. In case of the rabbit serums there was some cross-protection, but in general the only protection shown was by homologous serums (see Table 2). The results were uniform so far as practically all of the commercial serums were concerned, that is, they showed no protection against these selected types. The technique used was as follows: 0.2 cc. of the serum was diluted so that this amount was contained in 0.5 cc. and then injected intraperitoneally into white mice, followed immediately by intraperitoneal doses of culture varying from 0.01 cc. to 0.00,000,1 cc., the dilutions being made always so that the particular dose was contained in 0.5 cc. Two to four mice were used for each dose. By experiment it was found that to delay the inoculation of culture from 10 to 24 hours after injection of the serum much better protection was obtained, and also that an increase in the amount of serum employed from 0.2 cc. to 0.5 cc. afforded better protection. The rabbit serums tested by this later technique gave protection in a few cases against 0.01 cc. and 0.001 cc., but usually only against 0.00,01 cc. of culture. Controls were run in every case by inoculation (without serum) of 8 mice with doses ranging from 1 millionth of a cubic centimeter to 1 billionth of a cubic centimeter (doses varying by one thousand per cent, 2 mice to a dose).

Through the coöperation of Dr. E. K. Tingley, of Ambler, Penn., two polyvalent horse serums have been obtained which give protection rather uniformly against 0.00,01 cc. of culture (S3, S23, S60, S84, H.L. 200, 247, 258). Table I summarizes these experiments. Recent bleedings give a fair percentage of protection against 0.001 cc. of culture.

Table II gives a summary of the monovalent rabbit serums.

TABLE I

Summary of tests with polyvalent horse serums 86 and 90, and 10 commercial serums tested in the same way. (All mice received 0.5 c. c. of serum.)

Serum	Dose (in c. c.) killing control mice	Protection per cent against 0.00,01 c.c. (3 mice)	Type used in test
86 G	0.00,000,01	100	S 3
86 G	0.00,000,01	100	S 84
86 G	0.00,000,000,1	66⅔	S 23
86 G	0.00,000,001	33⅓	S 60
86 H	0.00,000,01	100	S 3
86 H	0.00,000,01	0	S 84
86 H	0.00,000,000,1	100	S 23
86 H	0.00,000,001	0	S 60
86 I	0.00,000,01	100	S 3
86 I	0.00,000,01	0	S 84
86 I	0.00,000,000,1	33⅓	S 23
86 I	0.00,000,001	100	S 60
86 K	0.00,000,01	100	S 3
86 K	0.00,000,01	100	S 84
86 K	0.00,000,000,1	33⅓	S 23
86 K	0.00,000,001	100	S 60
86 K	0.00,000,001	100	S 3
86 K	0.00,000,001	0	S 23
86 K	0.00,000,000,1	100	S 84
86 K	0.00,000,000,1	100	S 60
86 K	0.00,000,000,1	0	S 84†
86 K	0.00,000,000,1	0	S 60
86 K	0.00,000,001	66⅔	S 23
90 F	0.00,000,01	66⅔	S 3
90 F	0.00,000,001	66⅔	S 23
90 F	0.00,000,01	50	S 60
90 F	0.00,000,01	66⅔	S 84
Commercial A*	0.00,000,01	0	S 3
Commercial A*	0.00,000,01	50	S 84
Commercial A*	0.00,000,000,1	0	S 23
Commercial A*	0.00,000,001	100	S 60

*The remaining 9 commercial serums gave zero protection against all 4 types, with the controls dying on doses varying from one ten millionth of a c.c. to 1 billionth of a c.c.

†Culture and serum injected same time.

Along with these rabbit serums 68 commercial serums were tested, the majority of them against cultures H. L. 200, 247, 258. Eleven of these commercial serums gave 50 to 100% protection (2 mice to a dose) against a millionth of a cubic centimeter, when the controls (no serum) died on only a hundred millionth, and 3 serums protected against one hundred thousandth of a cubic centimeter. This could hardly be called protection at all as the inherent irregularities of any such test, using a living antigen, may account for differences no more striking than these. Three of the monovalent rabbit serums gave protection against 0.001 cc. of culture (homologous types), two against 0.01 cc., seven against 0.00,01 cc., two against 0.00,001 cc., and two gave

no protection even against homologous types.

Irregularities are frequent, but lack of uniformity in results did not surprise us in our work with the streptococci. Our experience with the protection tests against the pneumococcus has taught us that no serum will react in exactly the same way when injected into different

mice inoculated with different broth cultures. While the so-called "virulence" controls (i. e., the mice receiving no serum and 10—⁶, to 10—⁹ dilutions of culture) indicate, in a way, the number of organisms present in the culture used, yet, in case of the streptococci, too great reliance cannot be placed upon such high dilutions because of the difficulty in

TABLE II

Summary of experiments with monovalent and polyvalent rabbit serums. Protection tested against doses from 0.01 c.c. to 0.00,000,1 c.c.

Serum	Dose (in c.c.) killing control mice	Protection (per cent) against stated dose in c.c.	Type used in test	Type used in immuniza- tion	Amount of serum injected	
10.....	0.00,000,001	100%	0.00,001	200	258	0.2 c.c.
10.....	0.00,000,000,1	50	0.00,01	200	258	0.2 c.c.
10.....	0.00,000,000,1	100	0.001	258	258	0.2 c.c.
11.....	0.00,000,000,1	0	All doses	247	258	0.2 c.c.
11.....	0.00,000,01	50	0.00,01	200	258	0.2 c.c.
11.....	0.00,000,000,1	0	All doses	200	258	0.2 c.c.
11.....	0.00,000,000,1	0	All doses	258	258	0.2 c.c.
11.....	0.00,000,01	50	0.00,01	200	258	0.2 c.c.
11.....	0.00,000,01	50	0.00,1	200	258	0.5 c.c.
12.....	0.00,000,000,1	0	All doses	247	258	0.2 c.c.
12.....	0.00,000,01	0	All doses	258	258	0.2 c.c.
12.....	0.00,000,000,1	50	0.00,001	258	258	0.2 c.c.
12.....	0.00,000,001	0	All doses	200	258	0.2 c.c.
14.....	0.00,000,01	50	0.00,1	200	200	0.2 c.c.
14.....	0.00,000,000,1	50	0.00,000,1	258	200	0.2 c.c.
14.....	0.00,000,000,1	50	0.00,1	200	200	0.5 c.c.
15.....	0.00,000,000,1	0	All doses	247	200	0.2 c.c.
15.....	0.00,000,01	50	0.00,000,1	258	200	0.2 c.c.
15.....	0.00,000,001	50	0.00,001	200	200	0.2 c.c.
15.....	0.00,000,000,1	0	All doses	247	200	0.2 c.c.
16.....	0.00,000,001	50	0.00,01	200	200	0.2 c.c.
16.....	0.00,000,000,1	50	0.00,001	247	200	0.2 c.c.
16.....	0.00,000,01	0	All doses	258	200	0.2 c.c.
16.....	0.00,000,01	100	0.00,01	200	200	0.2 c.c.
16.....	0.00,000,01	100	0.01	200	200	0.5 c.c.
18.....	0.00,000,001	100	0.00,000,1	200	200	0.2 c.c.
18.....	0.00,000,000,1	0	All doses	247	200	0.2 c.c.
18.....	0.00,000,01	50	0.00,001	258	200	0.2 c.c.
18.....	0.00,000,01	100	0.00,001	200	200	0.2 c.c.
18.....	0.00,000,01	100	0.00,001	200	200	0.2 c.c.
31.....	0.00,000,001	100	0.01	258	258	0.2 c.c.
31.....	0.00,000,000,1	0	All doses	200	258	0.2 c.c.
31.....	0.00,000,000,1	0	All doses	247	258	0.2 c.c.
31.....	0.00,000,1	50	0.01	258	258	0.5 c.c.
31.....	0.00,000,1	50	0.00,1	S 23	258	0.5 c.c.
48.....	0.00,000,001	0	All doses	S 3	Poly. ⁹	0.5 c.c.
48.....	0.00,000,01	66	0.00,01	S 23	Poly. ⁹	0.5 c.c.
48.....	0.00,000,000,1	66	0.00,01	S 60	Poly. ⁹	0.5 c.c.
48.....	0.00,000,000,1	33	0.00,01	S 84	Poly. ⁹	0.5 c.c.
49.....	0.00,000,001	0	0.00,01	S 3	S 3	0.5 c.c.
49.....	0.00,000,01	0	0.00,01	S 23	S 3	0.5 c.c.
57.....	0.00,000,001	0	0.00,01	S 3	Poly. ⁹	0.5 c.c.
57.....	0.00,000,01	100	0.00,01	S 23	Poly. ⁹	0.5 c.c.
57.....	0.00,000,000,1	100	0.00,01	S 60	Poly. ⁹	0.5 c.c.
57.....	0.00,000,000,1	66	0.00,01	S 84	Poly. ⁹	0.5 c.c.
61.....	0.00,000,001	0	0.00,01	S 23	S 23	0.5 c.c.
61.....	0.00,000,001	0	0.00,01	S 3	S 23	0.5 c.c.
62.....	0.00,000,001	50	0.00,01	S 3	S 32	0.5 c.c.
62.....	0.00,000,000,1	50	0.00,01	S 84	S 32	0.5 c.c.
62.....	0.00,000,000,1	0	0.00,01	S 60	S 32	0.5 c.c.
62.....	0.00,000,001	0	0.00,01	S 23	S 32	0.5 c.c.
63.....	0.00,000,001	50	0.00,01	S 33	S 32	0.5 c.c.
63.....	0.00,000,001	0	0.00,01	S 23	S 32	0.5 c.c.
63.....	0.00,000,000,1	66	0.00,01	S 60	S 32	0.5 c.c.
63.....	0.00,000,000,1	66	0.00,01	S 84	S 32	0.5 c.c.
66.....	0.00,000,001	0	0.00,01	S 3	S 60	0.5 c.c.
66.....	0.00,000,001	0	0.00,01	S 23	S 60	0.5 c.c.
66.....	0.00,000,000,1	66	0.00,01	S 60	S 60	0.5 c.c.
59.....	0.00,000,001	33	0.00,01	S 3	S 23	0.5 c.c.
59.....	0.00,000,001	0	0.00,01	S 23	S 23	0.5 c.c.
59.....	0.00,000,000,1	33	0.00,01	S 60	S 28	0.5 c.c.
59.....	0.00,000,000,1	0	0.00,01	S 84	S 23	0.5 c.c.

9. Cultures S 3, S 23, S 60, S 84, S 32 and S 273.

breaking up the clumps of bacteria present in the cultures. Various kinds of broths have been tested in an effort to get a uniform, non-granular suspension of organisms, but without much success. Glucose broths (one-tenth % solutions) if used when 12 to 15 hours old, give rather uniform suspensions but seem to decrease the killing power. This has been found to be true of *Diplococcus pneumoniae* also.

In view of the fact that chickens are very resistant to streptococci it was thought possible to obtain a potent serum by injecting them with large numbers of living organisms. In the first experiment along this line 6 hens were bled from the wing vein, and preliminary tests run to determine the protection afforded to mice by normal chicken serum. Zero protection resulted from tests run against H. L. cultures 200, 247 and 258. The 6 hens were then inoculated intraperitoneally with 0.1 c.c. of heat killed cultures of *S. hemolyticus* (saline suspension having a turbidity of 1,000 parts per million), bearing the above numbers, inoculating two hens with each culture. On the two days succeeding the dose was doubled each time, and after an interval of 1 week 0.1 cc. of living culture of the same turbidity as the killed cultures was injected intraperitoneally. The dose was doubled at each injection thereafter until finally 5 cc. of a heavy suspension were injected intraperitoneally weekly. These very large doses were without noticeable effect on the chickens. Therefore, when an additional lot of 3 roosters and 3 hens were added to the original 6 chickens, living cultures were given at once without previous administration of the heat killed cultures. Throughout the experiment none of the chickens died or lost weight, remaining apparently in normal condition. Six of them escaped from the cages at the end of 5 months, but the remaining 6 were kept under treatment for a total period of 14 months. They were then bled and their serum tested for pro-

tection to white mice against both the homologous and heterologous types. Test bleedings were made at 3 and 6 month intervals and protection tests run in a very small way because of the lack of sufficient serum obtained from these bleedings. No protection resulted. Unfortunately in the first test with the serum from the final bleedings (14 months) a large number of the mice used were heavily infected with *B. typhi-murium*, and the results were consequently obscure. There remained an insufficient quantity of all of the serums for a complete duplicate test with more healthy mice, hence the results of the two tests are not comparable. They agree, however, fairly well with the results obtained with the monovalent rabbit serums, i. e., the highest protection (0.5 cc. of serum against 0.01 cc. of broth culture) was afforded by homologous serums. It should be noted, however, that no better protection was given by these homologous chicken serums than was afforded by the polyvalent horse serum prepared by Dr. Tingley. Very little cross protection was demonstrated.

After the appearance of the paper by Clark and Felton¹⁰ on the toxic filtrates of hemolytic streptococci it was thought that a protective serum might be obtained from rabbits by injecting them with such filtrates. Their method was followed as closely as possible. Flasks containing 60 cc. of sterile Locke's solution plus 0.15 per cent of glucose and defibrinated rabbit blood in quantity sufficient to give a reading of 20 per cent on a Sahli hemoglobinometer, were inoculated with three different cultures of *S. hemolyticus*. Very good growth was obtained. After 48 hours the cultures were filtered through Berkfeld filters and 2 cc. of the filtrate injected intravenously into 3 rabbits weighing 2310, 2800 and 2820 grams respectively. Two days later another lot of filtrate was prepared and 3 more rabbits inoculated intravenously with 2, 3 and 4 cc. each. The first three

10. J. A. M. A., v. 71, 1918, p. 1048.

rabbits inoculated became very weak on the second day, one had diarrhea, all had slightly increased temperature. On the fifth day one of them died, and another on the fourteenth day. Of the second lot one died (the one receiving 4 cc.) within 24 hours, but the other two lived, and were given additional doses after one week. Twenty-five lots of filtrate were made, tested on rabbits and used for immunizing these animals. In no case, however, was a filtrate obtained which killed a two thousand gram rabbit when injected intravenously in amounts less than 2 cc., and in a few instances not even 4 cc. caused the death of the animal. The immunizing tests were begun in May (9 rabbits) and continued for 3 months. They were given small amounts at first, the dose being increased gradually until finally 10 cc. were injected intravenously for 3 successive days at weekly intervals. At different times (1 month, 6 weeks, 2 months) the rabbits were bled from the marginal ear vein and their serum tested for protection to mice against living virulent cultures of hemolytic streptococci of the same type as used for injection of the rabbits. No protection was given. At the end of 3 months the rabbits then remaining alive were divided into two lots, one lot receiving 0.01 and 0.001 cc. of living culture intravenously, the other lot being bled and the serum tested for protective properties.

Of the two immunized rabbits inoculated with living cultures the one receiving 0.01 cc. of culture died within 4 days; the one receiving 0.001 cc. of culture became very sick but finally recovered. Two weeks later he was bled and his blood tested (defibrinated) for protection to mice. 0.1 and 0.2 cc. of this defibrinated blood was injected intraperitoneally into mice 24 hours prior to doses varying from 0.01 cc. to 0.00,000,001 cc. of virulent broth culture. There was about 20 per cent protection in the mice receiving one ten thousandth cc. of culture. The serum obtained from the rab-

bits under treatment with this toxic filtrate for 3 months was tested in the usual way for protection to white mice with practically negative results. This may have been due to the fact that the immunization was not continued long enough or that too weak a toxic filtrate was obtained for the injections. In the light of recent experiments with the pneumococcus and with different cultures of *S. hemolyticus* it is thought that perhaps better results might have been obtained if glucose had been omitted from the cultures.

CONCLUSION

There is at present no satisfactory classification of the streptococci. In view of this fact, therefore, any method of standardization of the antistreptococcus serums will be very laborious and more or less inadequate. That is, it will be necessary in the light of our present knowledge of the streptococci as a whole, to test the serums against a number of types. The results so far obtained show that it is possible to obtain antistreptococcus serums of higher protective properties than the majority of those now being produced. More potent serums would probably be obtained if they were not produced by the injection of such a large number of heterogeneous types. Considering the types S3, S23, S60 and S84 as representative of the hemolytic streptococci concerned in the respiratory diseases it would seem that a serum to be used in such infections might be more effective if produced by immunization against these types alone or, at any rate, against closely related types.

The small amount of chicken serum made and tested for protective properties did not show any greater protection against homologous types of hemolytic streptococci than was afforded by the polyvalent horse serum prepared by Dr. Tingley.

Negative results were obtained in the protection tests run with rabbit serums obtained by the injection of filtrates of cultures of *S. hemolyticus*.

A STUDY IN DENTAL PROPHYLAXIS

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THAT regular periodical prophylactic treatments will bring about an improved condition of the mouth is shown by the figures secured in work among the employees of the Metropolitan Life Insurance Co. during the years 1918, 1919 and 1920.

During the past five years, thousands of the employees of the company have received two prophylactic treatments each year. Careful records have been made of mouth conditions. Cleanliness of the mouth has been classified under "Yes," "No," or "Fair." Cases classified under "No" are those which show considerable amount of tartar deposits with inflammation of gum tissues. Those classified as "Fair" have slight deposits of tartar and slight gum inflammation while those classified under "Yes" are practically free from tartar or gingivitis. It should be understood that this classification was made solely from the viewpoint of hygiene or whether the patient's health might be affected by mouth conditions. Therefore, those classified under "Yes" must not be understood as being perfectly clean. There may be found stains either from tobacco or other causes, but this was not believed to influence the health condition of the mouth nor of the patient.

Figures secured under these classifications should prove of value and of interest.

All employees who first came to the Dental Division in 1915, and who have continued to come twice each year are called Class 1; those who first came in 1916, are called Class 2; those in 1917, Class 3; in 1918, Class 4; in 1919, Class 5; and in 1920, Class 6.

It was in 1918 when we first ascertained the percentage of "Yes," "No"

or "Fair" for the four classes we had at that time.

TABLE I
PERCENTAGE TABLE OF "YES," "NO" AND
"FAIR" IN 1918

	Yes	No	Fair
Class 1 started in 1915....	27%	25%	48%
Class 2 started in 1916....	25%	27%	48%
Class 3 started in 1917....	18%	29%	53%
Class 4 started in 1918....	10%	50%	40%

These figures show that 27% of Class 1 were "Yes"; in Class 2, 25%; Class 3, 18% and in Class 4 only 10%. The class that had been coming regularly twice each year for the longest period, showed the highest per cent of "Yes" and the balance of the classes showed their respective standings according to the length of time they had received these treatments.

It is interesting to note that the youngest class at that time, namely the fourth class, showed 50% under "No," while the first class showed only 25%.

In examining this table, we notice the interesting fact that class 1 in 1918, showed 27% under "Yes" and that this is increased to 33% in 1919 and 39% in 1920.

We shall also notice that in 1918, class 1 had 25% under "No" and that this is reduced to 9% in 1919 and to 6% in 1920.

In class 2, we find the same marked improvement. In 1918, 25% of this class had "Yes" mouths. This is increased to 33% in 1919 and to 43% in 1920. Studying this class under the heading of "No," we find in 1918 there is 27% which was reduced to 9% in 1919 and to 7% in 1920.

We shall notice this same improvement in each of the different classes.

In studying these figures under the heading of "Fair," we notice an interest-

TABLE II

	"YES,"			"NO,"			"FAIR,"		
	1918	1919	1920	1918	1919	1920	1918	1919	1920
Class 1 started in 1915.....	27%	33%	39%	25%	9%	6%	48%	58%	55%
Class 2 started in 1916.....	25%	33%	43%	27%	9%	7%	48%	58%	55%
Class 3 started in 1917.....	18%	35%	42%	29%	9%	6%	53%	56%	52%
Class 4 started in 1918.....	10%	27%	40%	50%	14%	9%	40%	59%	55%
Class 5 started in 1919.....	....	21%	33%	....	27%	12%	....	52%	55%
Class 6 started in 1920.....	....	....	13%	....	....	31%	....	....	56%

ing fact. In 1919, class 1 had 58% "Fair." In 1920, this is reduced to 55%, or a loss of 3%. We shall also notice there is a reduction under the heading "No." In 1919 there was 9% and in 1920, 6%, or a loss of 3%. This makes a total loss of 6% under "No" and "Fair."

If we study the figures under "Yes" we find that there has been an increase of 6% from 1919 to 1920. This shows that 3% was transferred from the "No" to the "Yes" and 3% from the "Fair" to the "Yes;" or, of course, it would be possible that the entire 6% promotion took place from the "Fair" to the "Yes" and 3% from the "No" into the "Fair."

Studying class 2 under the heading "Fair," we find 58% in 1919 and only 50% in 1920. This class, under the heading "No" shows 9% in 1919 and 7% in 1920. This makes a total loss of 10% in these two classes. This is to be accounted for under the heading "Yes" because here we find the increase

under "Yes" goes from 33% in 1919 to 43% in 1920, or an increase of 10%.

The improvement in class 1 from 1918 to 1919 is shown as follows: We find a gain of 6% under "Yes," a gain of 10% under "Fair" which amounts to 16%. We shall notice there is a loss of 16% under "No."

It is also interesting to note all of the classes 1, 2, 3, and 4 show an increased per cent under "Fair" between 1918 and 1919, but all show a loss between 1919 and 1920, but in every case the gain under "Yes" equals the loss under "Fair" plus the loss under "No."

Class 5 also shows an increase under "Fair" for its first two years and it will be interesting to note if in its third year it will respond to the same results as have the first four classes.

These figures secured from over 26,000 cleansing operations should be sufficient proof that regular periodical prophylactic treatments bring about an improved condition of the mouth.



For Training Physical Directors and Coaches.—Harvard Graduate School of Education, in coöperation with the university departments of hygiene and physical education and other departments of the university, announces a program of study and training in physical education leading to the degrees of master of education and doctor of education.

For the master's degree at least four whole courses must be completed with distinction,

and at least one academic year must be spent in residence. A part of all the program may be taken in the summer school.

Courses, or half courses, are required in principles of physical education and hygiene; play and recreation; education; history, present status, and administration of physical education; and practice of physical education in schools and colleges, besides which there are electives.—*School Life*, U. S. Bureau of Education. May 1, 1921.—(J. A. T.)

APPLIED SANITATION IN ALABAMA

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and

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IN the South, where soil and climatic conditions are especially favorable to the growth of those intestinal bacterial flora and parasites which are responsible for typhoid fever, hookworm, the dysenteries, and other intestinal infections, the disposal of human feces is a particularly important feature of any program of public health activity.

Since the greater proportion of the population of this section of the country is strictly rural, the disposal of feces re-

solves itself largely into the provision of small group and individual feces disposal installations; i. e., privies or tanks for private homes.

Sewers, chemical liquidation, septic tanks, or septic privies are undoubtedly the most satisfactory means for feces disposal. But any installation of these types is relatively expensive. Sewers are practicable only in communities or closely adjacent to streams. Chemical liquefying has not been sufficiently ex-



Plate 1. The pit, 3' 8" x 3' 0" x 4' to 5' deep, has been dug, and caving at the surface prevented by a casing of 1' x 12" planks. The soil is hard clay.



Plate 2. Privy construction was standardized. The buildings were made in sections and assembled over the pits. This shows the floor and one side of a privy in place.

ploited in Alabama to be popularly recognized as a means of disposal. And the *modus operandi* of the biological processes is a closed book to practically all laymen.

As a result of these natural obstacles, there has been an almost complete lack of proper feces disposal, except in rather circumscribed areas, in which intensive education was undertaken.

Morbidity records, incomplete though they be, the findings of school nurses, and even casual observation, are convincing arguments for the urgency of any action or policy which will make the proper disposal of feces a more universal fact.



Plate 3. Showing the exterior of the completed building. Note the board which covers that part of the pit which extends beyond the rear wall of the building. See Plate No. 2. A bank is set around the base of the building, to shed rainwater and to fly-proof the pit.

Burial of feces was a Mosaic injunction; and burial of feces is, under the circumstances, the solution of the present day problem in rural districts.

The pit privy is an inferior type of disposal plant, at least from an academic point of view, but it is so vastly superior to the surface-privy that a comparison of the two is odious.

A pit-privy is but slightly more expensive to construct than a substantially built surface-privy. It can be made fly-proof. It is rarely odorous, and this condition, if it arises, can be remedied simply and effectively. Its most valuable feature is the fact that its success depends on no mysterious process, and, once constructed, it requires very little attention until the pit has become filled. The only disadvantage of the pit privy is the possibility, when the water-table rises, of soil pollution. For this reason the location of a pit privy in wet terrain is not recommended. Of course, pit privies should never be located in limestone, shale, or coarse gravel formations.

During the recent strike of United Mine Workers in the Alabama coal fields, the striking miners and their families moved into tents, forming veritable tent-cities adjacent to a number of the permanent mining camps.

After providing a safe water supply, the disposal of feces was of most concern. Because of the relatively temporary nature of these tent cities, sewers, or chemical or biological disposition of the



Plate 4. A tent camp with privy of this type.

wastes were impracticable. Pit privies were best adapted to the conditions, and were installed under the direction of members of the Engineering Staff of the State Board of Health.

Sanitary measures heretofore adopted in municipalities in this State have been largely responsible for a 50% reduction in the number of deaths in the State from

typhoid fever in the last three years. Any further material reduction in this and kindred diseases and the eradication of hookworm disease is largely dependent upon sanitary installations in rural districts.

In the accompanying series of photographs, stages in the construction of a pit privy are depicted.



MARKET MILK RATING FROM A PUBLIC HEALTH STANDPOINT

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ONE of the most perplexing problems that confronts the health officer of today is that of rating the milk supply of his territory so that the resulting score represents the true value of the milk as marketed, and of getting this information before the milk-consuming public in a concrete and comprehensive form, so that the consumers may be interested and educated to the point of buying milk on a quality basis.

Market milk may be taken up from many angles. The producers look at this question mostly from a standpoint of returns; the consumer usually from a high butter fat content; while the health officer is confronted with the problem of combining these factors together with those, primarily, of safety from a sanitarian's standpoint, secondly, of justice to the careful producer and marketer, and finally of education of the consuming public to the fact that milk may be a dangerous as well as an excellent food, and that the health office is the proper source of reference regarding the milk question.

The milk-consuming people are not technicians—technical terms are confusing and misleading to the layman. Publishing high dairy scores may be mislead-

ing, because the dairy with the high score does not always market the safest milk; bacterial counts as read are always confusing, and the milk of a high butter fat content may be the worst from a sanitary standpoint.

The following method of rating milk, with slight alteration, was used by the writer in conjunction with Dr. A. J. Warren, for a period of a year in Charlotte, N. C., with excellent results. Each month the results were tabulated, published in the newspapers, and a personal letter sent to each practicing physician asking that he consider the ratings before recommending any milk supply. The dairymen of Charlotte supported this system and did excellent work under it; the physicians coöperated heartily, and the milk-consuming public became interested to such an extent that scarcely a day passed without numerous calls from citizens about the ratings of the various dairymen.

METHOD OF RATING

RAW MILK		Points
		60
Sanitary or Keeping Quality		
Bacterial count	40	
Sediment test	10	
Temperature	10	

Equipment & Methods of Handling Milk 25

Equipment	7	Pasteurized Milk	Points
Methods	18	Sanitary or Keeping Quality.....	70
Nutritive Value	15	Bacterial count.....	50
Butter fat	7	Sediment test.....	10
Solids not fat	8	Temperature	10

Sanitary or Keeping Quality—Allotment and reductions.

Bacterial Count—40 points

5 Original packages collected

4 lowest counts averaged

25,000 colonies or less

25— 40,000 colonies	deduct	40 points
40— 60,000 "	"	4 "
60— 80,000 "	"	6 "
80—100,000 "	"	8 "
100—120,000 "	"	10 "
120—140,000 "	"	12 "
140—160,000 "	"	14 "
160—180,000 "	"	16 "
180—200,000 "	"	18 "
Over 200,000 "	"	20 "
		30 "

4 Original packages collected

3 lowest counts averaged

40 points

—	40 points
—	5 "
—	7 "
—	9 "
—	11 "
—	13 "
—	15 "
—	17 "
—	19 "
—	21 "
—	30 "

Three original packages taken—average of all counts with deductions same as 5 original packages taken.

Sediment Test—10 points.

Deduct for amount of sediment found as determined by sediment test. Deductions made for unusual amount of sediment using gauges similar to those shown in "Standard Methods of Milk Analysis"—A. P. H. A., 1921.

Temperature—10 points.

Perfect score for milk delivered under 50 degrees. Deduct .5 point for every degree above 50.

Equipment & Methods of Handling Milk 15

Equipment	5
Methods	10
Nutritive Value.....	15
Butter fat content.....	7
Solids not fat.....	8

Sanitary or keeping quality—allotment and reduction.

8 specimens taken—average of 6 lowest counts

7 or 6 specimens taken—average of 5 lowest counts

5 specimens taken—average of 4 lowest counts

Less than 5 specimens taken—average of all counts.

REDUCTIONS

Average of 15,000 or less.....50 points

15— 25,000 colonies	deduct	4 "
25— 40,000 "	"	8 "
40— 60,000 "	"	12 "
60— 80,000 "	"	16 "
80—100,000 "	"	20 "
Over 100,000 "	"	30 "

Equipment and Methods of Handling Milk—25 points.

Proportional valuation as determined by dairy score using U. S. Department of Agriculture dairy score cards.

Nutritive Value.....	15
Butter fat content—valuation 7 points	
Deduct .3 of 1 point for every .1 of 1% below 4%.	
Solids not fat — valuation 8 points	
Deduct .3 of 1 point for every .3 of 1% below 9%.	

Equipment & Methods.....	15 points
Equipment	5 points
Methods	10 "

Proportional reduction from plant score as scored by U. S. D. A. score card for pasteurizing plants.

Nutritive value.....	15 points
Butter fat content.....	7 points
Solids not fat.....	8 "

Same proportional reductions as in rating for Nutritive Value of Raw Milk.

NOTE.—The tuberculin test for dairies supplying raw milk is covered in dairy score, and should be insisted on.

Practical observations from use of this system for 1 year:

1. It awakened the milk consuming public to the value of the work of the

Health Department on this subject, and converted this Department to a center of dissemination of information regarding the question of a good milk supply.

2. It proved of value to the practicing physicians as so attested.

3. It proved a stimulus to the careful handling of milk by the dairyman, and was a cause of radical improvement of facilities on the dairy farm. It also had practically the unanimous endorsement of the dairymen.

4. It is of great value in recording the progress of market milk supply from a health standpoint. Monthly averages of total scores marks improvement or otherwise. It also entails minimum office work.



Vitamins in Milk.—One of the newer facts recently disclosed is that milk is not equally rich in all vitamins, but contains these essential accessory dietary factors in variable amounts. The antiscorbutic value of milk depends almost entirely on the fodder of the cow. Human milk, no doubt, also varies with the nature of mother's food, and in some instances is deficient, owing to eccentricities of diet or to poverty. The quantity of vitamins in plants probably varies with the soil in which they are grown and animals in turn suffer by lack of, or profit by richness of, vitamins in plant foods. Milk is usually rich in all three vitamins. It is unusually rich in fat soluble A, contains an abundant amount of water soluble B, and a variable, but ordinarily sufficient quantity of antiscorbutic vitamin. Therefore, it protects against all of the known deficiency diseases. It has long been known that the effect of heat on vitamins varies with the reaction and other factors. Most vitamins are more readily affected by heat in an alkaline medium than

in an acid one. Fortunately, most foods are acid. Milk is acid from the time it leaves the udder. With regard to the effect of heat upon antiscorbutic vitamin, it has been shown that the duration of the heating process is of greater importance than the degree of temperature to which the food is subjected. Dry milk may retain its antiscorbutic virtue in spite of drying, canning and ageing, especially if well packed and hermetically sealed. It loses its potency after it is exposed to the air. Canned milks and dried milks, then, retain the fat soluble A and water soluble B vitamins in almost their original potency. The only vitamin in these preparations that may be affected is the antiscorbutic vitamin. The amount of this in canned milk will vary with many factors, primarily, the amount in the original milk, and, secondarily, on the process of heating and evaporation, with special reference to oxidation.—M. J. Rosenau, *Boston Med. & Surg. Jour.*, May 5, 1921, 455.—(D. G.)



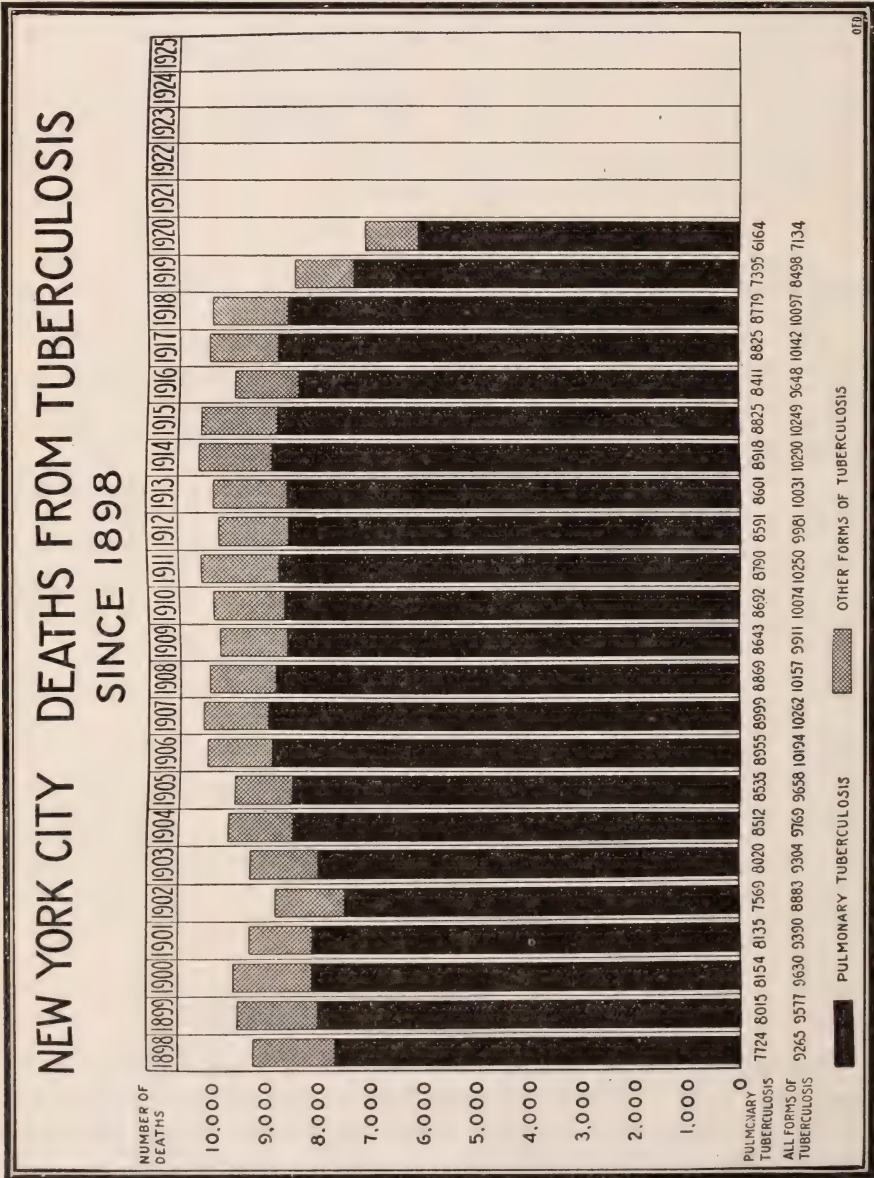
SPECIAL RAILROAD RATES

The next issue of the A. P. H. A. NEWS LETTER, appearing August 12, will contain information concerning special railroad rates to the Annual Meeting. Mailing clerks sometimes discard second class envelopes. Insist on receiving your NEWS LETTER.

DECLINE OF TUBERCULOSIS IN NEW YORK CITY

The general decline of tuberculosis throughout the country is nowhere better seen than in New York City where the death rate is now down to half what it was 20 years ago. The accompanying charts show clearly the effects, not only of generally improved living conditions, but also of the earnest and effective public health work in this city.

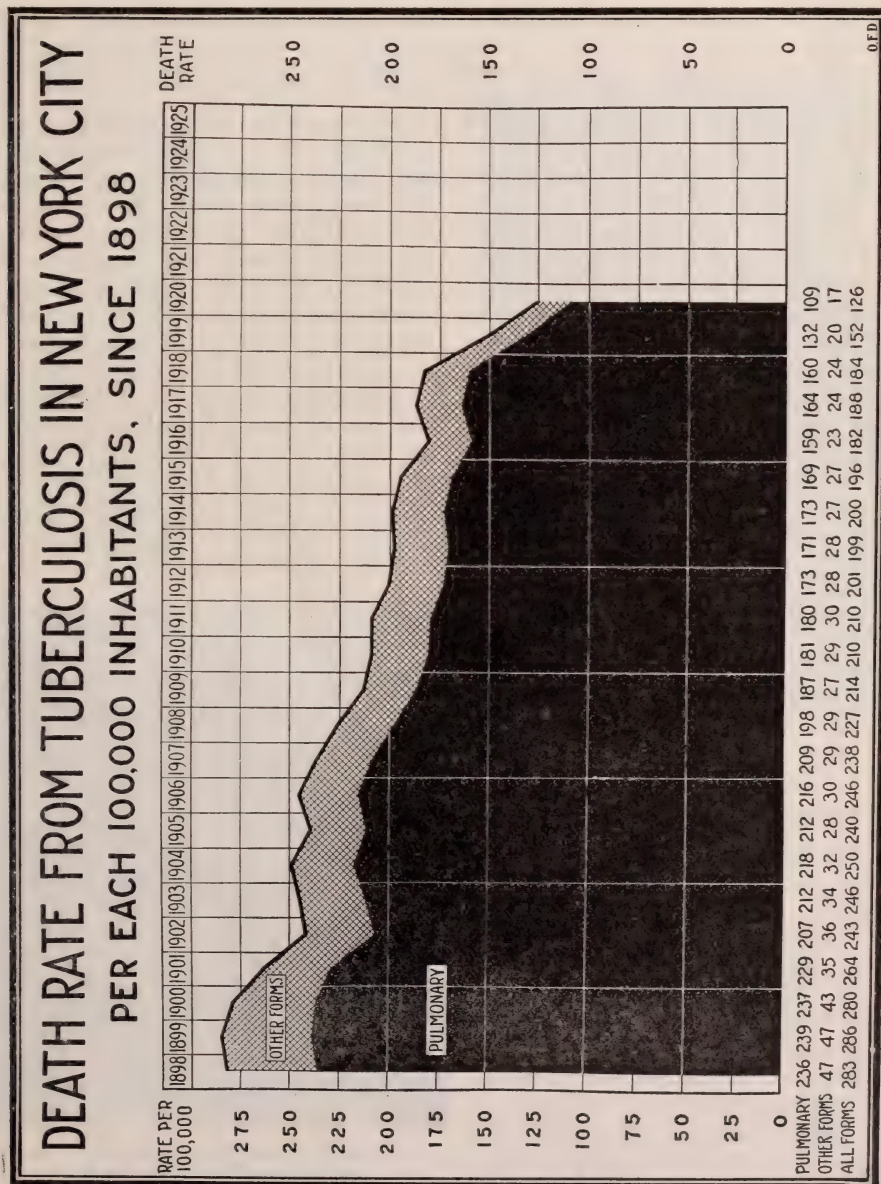
In 1898, when the Greater City was consolidated, there were 9,265 deaths from tuberculosis among the three million people then living in the city. In 1920, when there were more than five and a half million inhabitants, the total deaths from all forms of tuberculosis were only 7,134. If the death rate of 1898 had prevailed in New York last year, the deaths instead would



have numbered 16,032. There has been a saving, therefore, of 8,898 lives during a single year.

What has accomplished this marked reduction, under the most intense and congested conditions of living and work, is difficult to apportion accurately; but apart from the acknowledged influence of the steady improvement of working and economic conditions, the many public health measures for which New York has stood must in a great measure be responsible.

New York was the first city in the country to enforce the registration of tuberculosis. There has been a continuous effort to segregate very large numbers of the advanced cases, there never being less than four to five thousand patients in tuberculosis hospitals within the city limits alone. There is also the very effective and constant sanitary supervision exercised by the Department of Health. Finally, credit must be given to the dispensary organization for the control of tuberculosis in which there



is close coöperation of municipal and private hospitals, and which has been one of the most thorough and effective associations in the fight against tuberculosis in any community.

The most hopeful fact to be noted is the very great decline of mortality among children. Whereas the death rate from pulmonary tuberculosis has been cut in half, the surgical, abdominal and meningeal forms of tuberculosis have been reduced almost two-thirds from what they were.

The segregation of advanced cases, the great importance attached to home supervision, especially through dispensary methods, and the general pasteurization of milk in this city, must be recognized as chiefly responsible for the progress made.

The charts come to the Journal through the courtesy of Mr. Godias J. Drolet, Statistician of the New York Tuberculosis Association, a society that has exerted no small influence in lessening the tuberculosis toll.



GOOD WORK OF IRENE KAUFMAN SETTLEMENT

It seems at first sight a step backward when the Irene Kaufman Settlement of Pittsburgh, Penn., announces that it is giving up its nursing service. The truth is, however, that this institution saw nearly 20 years ago the need of a nursing society in the city, and established one. This it has maintained, until the demonstration of its benefits has caused the formation of a larger association, a city-wide Public Health Nursing Association. In turning over its functions to the larger society, the Irene Kaufman Settlement is doing what all pioneers should do when they have blazed the trail and proved the value of the land, in leaving the development of it in its larger phases in the hands of those who follow them.

The nursing service of this Settlement was started April 1, 1902, and continued until December 31, 1920. During these 19 years, the nurses associated with the Settlement, nursed 21,869 patients, made 129,775 nursing visits, and 30,816 social and instructive visits. The work, the earliest of its kind in Pittsburgh, soon became the standard for the city, and during recent years, it has been known as the best of the nursing services, not only in Pittsburgh, but in Western Pennsylvania. In 1902, the work started with one patient on the visiting list, with a total of ten patients served the first month. During the year 1920, a total of 1,562 were visited 20,101 times. These figures indicate the growth of the work.

This District Nursing Service of Pittsburgh has always been public health work in the broadest meaning of that term, and not merely "visiting nursing service." Em-

phasis was laid on the prevention of disease, teaching of hygiene, educational work, and the practical part of bed-side nursing. It has helped make the health history of the city. In 1907 the Settlement assisted in making the study regarding the health of the children of the public schools of Pittsburgh, which demonstrated the necessity and benefits of medical inspection in the schools, and the need of school nurses. From the results of this study and experiment, Pittsburgh now has a corps of school nurses, and medical inspection is an accepted and necessary part of the school work. The next service was in connection with the survey and experimental efforts to reduce infant mortality, out of which came what is known today,



A Typical Congested District in Which the Settlement Has Carried on Its Work

as the Infant Welfare Department of the Department of Health, with its various baby clinics, milk stations and welfare nurses.

During 1907-08, in connection with the Pittsburgh Survey, a study "35 Years of Typhoid" was made. From this study the city learned the real facts and the costs, financially and civic of this malady, and eradicated, once for all, this dreaded disease through the building of a modern filtration plant. In 1910 the Civic Club of Allegheny County, in coöperation with the Irene Kaufman Settlement, started on the roof of the Settlement building, the first open air school in Pittsburgh. The Settlement assisted in various ways, and in particular, the nurses of the Settlement carried, during the experimental first year, the necessary nursing work in connection with the school. This health achievement proved the value, locally, of the open air school idea, now supported by public funds through the Board of Education.

The standing and standards of the Settlement nursing service were recognized in 1914 when the Metropolitan Life Insurance Company started in Pittsburgh its nursing service to its policyholders.

In 1917, Sidney A. Teller, Resident Director, made a study of the Settlement's nursing service, especially in relation to pre-natal and post-natal service, and recognizing the relation of the high infant mortality rate in Pittsburgh with the lack of such service, recommended that another nurse be added to the staff. In May, 1918, an infant welfare nurse, whose work was to reach mothers long before the advent of the child, and to follow up the child until two years of age, was appointed and the first nursing service of its kind inaugurated. The Settlement soon opened its first weekly baby clinic, where babies, sick or well, were weighed by the nurse and examined by a doctor. The value of the work was soon recognized, and has now been started in other parts of Pittsburgh.

In the winter of 1918-19 came the great influenza epidemic. Without hesitation, the Settlement notified the Red Cross and the city health authorities that it was ready to take care of the nursing needs of the entire lower part of the city, known as the "hill district." It gained the praise of having the best nursing service in the city, and of rendering the greatest piece of service in the

epidemic. There was an increase of 560% in the number of patients handled, with 1,047 cases of influenza pneumonia alone.

From the very first the Settlement has stood for the principle of a city-wide nursing service similar to its own, and assisted in every effort to bring such an organization about. July 1, 1919, saw the starting of the work of the Public Health Nursing Association, which first, was not able to assume the financing of the Settlement's nurses, though the work was coördinated from the start. The Settlement continued to control its own nurses and met the finances for its



Stoop to Stoop Visits of the Kaufman District Nurses

own nursing district until the close of this year, December 31, 1920. The Association took over the nursing service Jan. 1, 1921.

As a by-product, growing out of the needs of the nursing service, there was established the Malbish Arumim Society, now grown to a membership of a thousand women, which still clothes the naked and cares for the sick.

It is a noble work, well conceived and well administered that the Irene Kaufman Settlement has undertaken, and leaving it now in other hands, it will be able the better to explore other new fields in bettering the health of the people.

EDITORIAL SECTION

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RESIDENCE AS A CIVIL SERVICE REQUIREMENT

At the Boston meeting of the A. M. A. the Executive Committee accepted a resolution deprecating the requirements of city, district or state residence as a requirement of Civil Service, and requesting municipal and state Civil Service Commissions to waive and omit from their requirements that qualification of residency.

This resolution touches upon a matter of great importance in health administration, for unquestionably well-qualified persons, if not the best that are available, are frequently debarred from the examinations of the Civil Service for the sole reason of non-residence.

Civil Service is unquestionably a boon to the people in preserving from the mercies of the politician appointments to public places. This is necessary, for the politician is ever at the elbow of the power that appoints, and is in a position to know what there is in the way of situations available. The protection of Civil Service rules here is so evident as to outweigh minor objections, such as that a commercial house often prefers non-Civil Service methods in the selection of its employees, but at the same time it is not free from the objections that confront other blanket policies when they are applied in special directions.

Throwing plums of public patronage into the laps of the citizens of a municipality is a common, political practice. It is true that in a busy manufacturing city near Boston it is useless for an outside contractor to submit a bid on a public building. Preference is given by the municipal authorities to home talent, and reasons for doing this in the individual cases are not difficult to formulate. The result is that citizens of the place, who may readily be lacking in that wide experience that cosmopolitan constructors might afford, secure the "jobs," and the city is deprived of the economies that might result from wider competition.

Not all public heads of departments are so diplomatic as was a professor in a state institution who was informed by the Civil Service Commission that his secretary was not a Civil Service person.

He took the announcement quietly and filed his formal requisition for a secretary, stenographer and typist with a knowledge of Latin, Greek, English, French, German and Italian and able to classify and care for specimens in entomology. It is needless to say that after the proper interval the reply came to him, "We have no applicant on our present lists filling your requirements and you are authorized to employ temporarily a person of your own selection." It is hardly necessary further to note that the secretary conforming to these specifications retained her position and "temporary" as it was in official parlance, she was there throughout the life of the professor. This incident illustrates an absurdity in the Civil Service principle. It is seldom practicable to apply to special cases laws or regulations framed for general purposes. It is a difficulty inherent in legislation. It is particularly evident when the application is to employees requiring such diversified and special attainments as are necessary in medical and public health service.

The man in whose hands lies the care of the health of the community has at best a difficult position. He requires unusual attainments, administrative ability and tact. A mistake here means loss to the community not to be repaired, for good health is the greatest of assets. The best man possible should be secured. This principle is recognized to an extent, for some of our large cities have gone far afield to secure for their health commissioners men ranking high among the most skillful in the profession, without regard to residence. This principle should be extended quite generally to the members of the staffs of health departments, for the heads of divisions and others of the important workers ought to be the best procurable.

In health departments there are probably many instances of injury to the quality of special work through the unnecessary residence requirement.

THE GENERAL SMALLPOX SITUATION

Smallpox has been needlessly prevalent in the United States during the fall of 1920 and the spring of 1921. It is still present in many places.

Without our present knowledge of preventive measures against this disease this condition is disgraceful. The presence of an unvaccinated person accounts for each case of smallpox. Who is to blame for the presence of the unvaccinated person?

For a number of years the type of smallpox in the United States has generally been mild. The education that comes with a 25 to 50 percent death-rate has been absent and other educators have not functioned efficiently. The educational institutions of this country do not practice vaccination or teach the truth about vaccination and smallpox. They either lack intelligence upon the subject or are not alive to its importance. Where is the university or college—medical included—that does not wait for an order from the health officer before requiring vaccination of its students? How much useful knowledge upon the subject of vaccination will the laity get from a college that is indifferent to so important a subject as vaccination.

Colleges should practice and teach what is known to be effective in preventing sickness and premature deaths. Educators should show the same interest in giving out information to the laity for the prevention of sickness and death that they manifest in providing vaccine for hog cholera and diseases of cattle.

If smallpox were now giving a death rate of 25 to 45 percent, the laity would soon become educated. They would be seeking vaccination. In the meantime the type of smallpox is now mild and only an occasional death results. The laity needs the advice of every one who knows the dangers that await an unvaccinated community. The mild type of smallpox does change to the severe and fatal type. In Chicago it changed in 1905. It reached a 11

percent death rate. Just now the confluent type is coming in to Chicago from the surrounding country. We should not be led into the belief that the fatal type of smallpox has gone into retirement permanently. We have seen the mild type give confluent and hemorrhagic smallpox. If we sleep and thereby acquire a susceptible population, the Montreal calamity of 1885 will sooner or later be repeated. In nine months 7,000 cases and 3,162 deaths.

There is but one cause for the presence of smallpox—the unvaccinated. It is clearly the duty of the medical profession to teach vaccination. Every educator should learn the facts about vaccination and teach others what he has learned.

We should teach:

1st. That vaccination with re-vaccination until the susceptibility to vaccine is exhausted gives absolute immunity from smallpox.

2nd. That practically every person is susceptible to vaccinia and vaccination should be repeated until it "takes."

3rd. That vaccinia is a systemic disease and that one point of inoculation is as good as more unless there is a period of time between the inoculations.

4th. That no large scratches or scarifications should be made for introducing vaccine. An abrasion one-sixteenth of an inch square is large enough or a scratch one-sixteenth of an inch is long enough. Avoid drawing blood.

5. Treat a vaccination with the same care that is demanded in all surgical procedures.

If these rules or other equally good rules are followed the occasional blood poisoning and painful sore arm would be avoided and anti-vaccinationists would be robbed of the only real argument they have against vaccination. The neglect of vaccination alone is responsible for the presence of smallpox.

H. S.

BOOKS AND REPORTS REVIEWED

Practical Dietetics, Diet in Health and Disease. *Alida Frances Pattee.* Mount Vernon, N. Y.: A. F. Pattee. 1920. Page 502. Price, \$2.25.

The fact that a 13th edition of this book has been called for is itself indicative of the many new discoveries in dietetics that are almost daily recorded. The first edition of the book came out in 1903. Since then interest of the experts has shifted from calories to vitamins. Many chapters of the original work would hardly be recognized in their present form. Yet it remains true that the author's viewpoint has not shifted. It is still expressed in the statement: "The preparation of food is a science as well as an art, the chemistry of which is as precise as the chemistry of the laboratory."

The present volume differs from its predecessors mostly in the earlier theoretical

sections. The discussion of the much discussed vitamins has not been made of disproportionate length, a frequent fault in works that seek to be up to date, but it is sufficient to demonstrate the importance of those substances which have not yet been chemically identified but which are now known to be "necessary to normal growth and maintenance."

The book, for the rest, represents the personal experiences of an intensively trained instructor in dietetics, as well as "the latest diets of leading physicians and hospitals." By reason of this comprehensiveness it is, and perhaps will long continue to be, a compendium which the trained nurse does well to have at hand. Its information is presented in simple enough form to be also useful to intelligent laymen.

MAY BLISS DICKINSON, R. N.

Hygiene. *W. Wilson Jameson, M. D., D. P. H., and F. T. Marchant, M. R. Philadelphia: P. Blakison's Sons Co., 1921. Pp. 400. Price, \$4.00 net.*

This book was written primarily for the use of students who are studying for the Diploma in Public Health in Great Britain. In employing the title of "Hygiene," the word is used in the European rather than in the American sense, and a somewhat more explanatory title might be "Sanitation and Public Health Procedure," since the book contains no personal hygiene.

The subject matter considered includes a discussion of water supplies, their purification, and water borne diseases; sewerage and sewage disposal; air conditioning; ventilation and lighting; supervision of milk supplies and other forms of food inspection; the administration of maternity and child welfare; school hygiene; the recording of vital statistics. A brief statement of the most important facts regarding each of the more common communicable diseases is given, and a brief consideration of the important industrial poisons. The sanitary law, as it applies to public health administration in Great Britain, is concisely presented, and a special chapter is included upon meteorology, physics and calculations, which together with a chapter on chemistry is designed to explain the technical processes and computations which the health officer is required to make.

The book is in the "Students' Synopsis Series" and is written somewhat after the form of a set of condensed student's notes, with the obvious attempt to crowd as many facts as possible into a small space. It accomplishes this purpose well and the facts are in general authoritative and clearly stated. It is not a highly readable book but it is of undoubted value as a student guide or as a small reference book for definitions, fundamental health facts and public health procedure.

C. E. TURNER.



Housing Problems in America, Proceedings of the Eighth National Conference on Housing, New York: National Housing Association, pp. ix-386. 1921.

The Conference reported in this volume was held at Bridgeport, Connecticut, in December, 1920. The time and place naturally drew in large measure upon the val-

uable experience which had resulted from different experiments in Bridgeport. The administrative, financial, legal, and construction aspects of housing came to the fore while the sanitary features were very nearly overlooked except as they are fundamentally involved in all discussions of housing. Factory production and standardization of parts were urged by several speakers as a desirable method of reducing costs. The Manager of the Bridgeport Housing Company in drawing "Lessons from Housing Work in Bridgeport," pointed out that the working man of today demands a decent home and consequently his wage must be sufficient to meet this demand. This is a much more rational method of attacking the problem of overcrowding than the argument based on health. It is interesting to note that in all the addresses and discussions on "Overcrowding and Its Effect Upon Health" emphasis is placed on "the intimate relation which overcrowding bears to health," and yet no speaker proved what "the relation" was. One speaker indeed stated that there is little doubt that poor housing is conducive to lowered vitality, but admitted that reliable statistics are lacking to prove this contention. A careful reading of Franz Schneider's article on "Some Shortcomings of Socio-Sanitary Investigations" (*American Journal of Public Health*, Vol. VIII, p. 3) ought to be required of everybody who attempts generalizations in this subject. Sanitarians should be made to agree that search for proof is wasteful if not futile. The arguments against overcrowding which rest on standards of decency, comfort, and general social well-being are adequate.

Simplified plumbing was urged as one of the lessons drawn from the Bridgeport experience, but it was pointed out that powerful agencies would fight its development. This seems a point in house sanitation at which the members of the Public Health Association might well render service.

M. T.



Health Center Bibliography. The American Red Cross has issued the second edition, revised, of its *Health Center Bibliography*. It bears the date of April 1, 1921. One hundred and thirty-five articles on the subject are listed, an increase of about 25 over the first edition, which appeared six months before.—(J. A. T.)

Industrial Colonies for the Consumptive.—*Sir German Woodhead, K.B.E., M.D., and P. C. Varrier-Jones, M.A. Preface by Sir Clifford Allbutt, K.C.B., M.D. Cambridge: University Press. 1920. Pp. 150.*

This little book of 150 pages is designed by the authors to set forth their idea of the proper treatment of tuberculous patients, especially in the light of the problems presented by the care of tuberculous ex-soldiers. It is founded on their experience in dealing with such cases. It is evident to the reader that conclusions may have been rather hastily reached, since 88 cases, should these prove to be the whole, are a small number on which to make the general statement:

"The new idea of the colony for the tuberculous is an expansion of the older idea because it contains the fundamental principle for all future action."

The book is essentially English, i. e., its criticisms are directed to conditions existing in England, both as to the laws relating to sanatoriums, length of stay (three months and three months only) and the economic conditions of both the country and the patients. It was apparently written to influence a parliamentary bill which has recently failed of passage, at least for the time being.

The idea is an appealing one. Their definition compels assent, namely, "the tuberculous colony is a community of consumptives in which hygienic and economic factors have been adjusted to suit the abnormal physical and mental state of its members." This the authors propose to bring about by the formation of colonies which shall have every facility for handling all sorts and varieties of cases. There are to be outlets for all the energies of patients who are able to work. There are to be rest houses for those who develop fever and hospital accommodations for the sick. The work is to be graduated by the powers of the individual case to carry on. This necessarily involves the question of sympathetic superintendents and overseers who shall see to it that the colonists do not exceed their physical ability to work. Such a colony would have two or three times as many carpenters or bricklayers or shoemakers or dishwashers as a regular village. That the colony would not be self-supporting is recognized, and the amount necessary for sup-

port of the individuals and ordinary saving is to be made up by subsidy from the state.

The industries about which each colony is to be centered are to be real industries, not play industries, and at the same time they shall be adaptable to the possibilities of a job suitable for consumptives.

The development of the colony is to be a recognition of the fact that every person with tuberculosis must receive from the government a subsidy sufficient to make up his loss of earning power from the disease. This bold recognition of the subsidy idea and its extreme logical extension is the most important economic proposition. It is argued that in the long run it is the most economical preceding for the State as a whole, and that it provides for the care of the tuberculous patient and his whole family, at least as long as they find it desirable to remain a part of the colony.

The whole conception of the colony is based on a premise which we in the United States have never been willing to accept. The authors express themselves as follows: "Without present knowledge we are, indeed, compelled to assume that except under the most favorable conditions complete arrest is out of the question except in a very small proportion of cases, and that the thing to be aimed at is a retardation of the disease such that a reasonable amount of work and exercise may be indulged in without exciting a recrudescence of those symptoms and conditions which oblige the patient to cease work."

True, it is that the number of sanatorium cures are woefully small, especially at the time of leaving the sanatoria, and that the number of breakdowns seems unduly large. Nevertheless, the study of a large number of cases has shown that a goodly portion do rejoin the ranks of the economically fit. In Framingham about 1% of the population as examined were found to have signs which pointed to old tuberculous disease. Those people in no way considered themselves handicapped or otherwise than healthy members of the community. The draft examinations showed the same thing in the country at large. Even where there were clinical signs of activity, by far the greater portion of the Framingham cases can be put in the arrested group, which furnish only occasional activations and which in

most instances are not a recrudescence of tuberculosis but of accidental infection prolonged by the person's resistance being lowered by the old tuberculous disease.

Certainly we in the United States, while we might do more in the way of colony development at our sanatoria and will look with interest on the development of the work in England, would not be willing to give up our idea of the possibility of cure, and turn our attention to segregation and to the "readjustment of the patient's life so that the ravages of the disease may make slower progress."

A. K. STONE, M.D.



Report on the Health Phase of Child Welfare in Tennessee to the Tennessee Child Welfare Commission. By Dr. H. H. Mitchell.

Dr. Mitchell's report is necessarily brief, because it forms but one part of a general inquiry covering various phases of child welfare. Nevertheless, it points out the fundamentals of health work as applied to the child. One of the most significant studies in the report is that which discloses that only 1.1% of the homes surveyed in three typical counties had any provision whatever for the sanitary disposal of sewage. The significance here lies not so much in the fact that so few homes have made such provision, but rather in the fact that the sanitary understanding and conscience of the community is so low. In view of these conditions, the widespread prevalence of filth diseases with a high death rate is not surprising.

Dr. Mitchell has pointed unerringly to the fundamental needs of effective public health effort whether in Tennessee or elsewhere in his recommendations as follows:

1. An efficient health organization with power to act, extending from the State Health Department down to the remotest community of the state.

2. A generous appropriation. Legislatures and the public must be made to realize that "Public Health is purchasable," and that money spent for better sanitation and better health is not an expenditure but an investment.

3. A trained medical profession with a better developed social viewpoint.

4. Coördination of voluntary health and welfare agencies with official health departments.

Dr. Mitchell's suggestion for the establishment of clinics and health centers with clinicians and nurses might seem on first impression to present the "bogey" of "State Medicine." However, if the establishment of such a program be "State Medicine" and if in order to protect the health of the people such a program is made necessary, then let State Medicine come, as it surely will come, once the public conscience be thoroughly aroused. State Medicine so-called, that is socialized preventive medicine, will come only when medical practice fails to lead and guide the public in the way of prevention rather than cure. The medical colleges and medical practice leaders in Tennessee, as elsewhere, have a very great and very pressing opportunity and responsibility in seeing to it that medical practice be so humanized and socialized as to anticipate and forestall community medical needs.

W. F. KING.



The Control of Sex Infections. J. Bayard Clark, M. D. New York: Macmillan Company, 1921. Pp. vii-132. Price, \$1.50.

One of the chief needs in combating a foe is to awaken in the minds of the public a realization that such a foe exists. So it has been necessary in the combating of venereal disease to arouse an interest and place the subject before the layman for open and purposeful thinking and discussion. To a great measure Dr. Clark applies this need in his little book. He presents the problem by giving the social factors which are the underlying causes of the diseases. A particular chapter is devoted to the role of alcohol in the spread of venereal diseases. The main part of the book, however, deals with the means of combating them. The discussions on the medical, legal, educational, and recreational aspects of prevention and cure are commonsense and practical. There is perhaps but one point with which the reviewer is not wholly in accord and that is in regard to universal military training. To the reviewer six months of training for the 18-year-old youth will not solve all his sex and social problems, although that is what the author seems to think can be accomplished.

The individuality of this little book lies in the fact that it is an authoritative statement of the subject, written in lucid, non-technical language.

A. N. T.

ASSOCIATION NEWS

MODEL HEALTH CODE

DISCUSSION

EDITOR AMERICAN JOURNAL OF PUBLIC HEALTH:

An editorial in the AMERICAN JOURNAL OF PUBLIC HEALTH of June, 1921, advises us to report our views on the Health Code to you. I believe I have a few criticisms to make of the one drawn up and published in the March issue. I realize that it is presuming a great deal to criticize a code which was drawn up by such responsible men.

First, in regulation 6, of chapter 2, it states that Measles should be excluded from school for seven days from the appearance of the rash. This might be amended by adding: There must be no nasal discharge or sore eyes.

In regulation 7, Measles is included in the diseases in which isolation is recommended. I believe that it is absolutely useless to isolate or quarantine cases of Measles unless we can go far enough to quarantine every case of cold until such time has elapsed that it can be determined whether it is Measles or not. I believe it is quite well proved that Measles is by far the most contagious in the initial stage during the presence of coryza and not nearly so much so during the eruptive stage. Why is it logical to quarantine a case during the stage when it is the least contagious or exclude it from school? Practical lessons have shown the uselessness of quarantining for Measles. Those cities having the most rigid quarantine laws do not lessen the incidence of this disease at all. I will guarantee that 95 per cent of the children in any city who have reached the age of 18 have had Measles and that in spite of rigid quarantine measures. A child during the initial symptoms is very apt to be in school and sneeze a few times and expose the other children and start the ball rolling. The other children in the initial stage expose others. A few days later, when the eruption appears, everybody gets excited and wants to do something to isolate the children from the others when the majority of the damage has been done.

I believe it would be very much more logical to quarantine certain non-quarantinable diseases that are not self-limited and yet are highly contagious than to quarantine

a few that we do. In this list I need to mention only one as a good example, namely, Ringworm.

In regulation number 9, concerning the minimum period of isolation, it states, "Poliomyelitis—until three weeks from the date of the receipt of the report of the disease." Is this not a very unscientific way to state a case? Why not have a definite period from the onset? For this I would suggest a 30-day period. The same criticism can be made of Scarlet Fever, in which it states at least three weeks after the receipt of the report by the Health Officer and until the ears, throat and so on have cleared up. Would it not be more satisfactory to state that the minimum quarantine should be so many days, such as 30 days, after the onset of the disease and as much longer as is necessary to clear up?

Under Whooping Cough it states that isolation should be until six weeks after onset. Is it not the general belief that Whooping Cough is not contagious after three weeks from the day of onset?

In Regulation 11, under the incubation period, it states that 14 days is essential for observation in a case of contact with Smallpox. Should this not be extended to 21 days, as there are undoubtedly a few cases who do not develop symptoms until a longer period than 14 days?

Trusting that my suggestions may be of some service, I remain

J. W. ROBINSON, M. D.,
Deputy Health Officer,
Los Angeles County.

The foregoing letter is published at the suggestion of Dr. Carroll Fox, chairman of the Committee on Model Health Code, U. S. Public Health Service, Washington, D. C. Both the Committee and the JOURNAL will be glad to receive further suggestions and criticisms on the report, which will be finally acted upon at the November meeting of the Association. As the legislative recommendations will be widely used in the United States, it is hoped that members will give the Committee the benefit of their suggestions. The report was published in the March issue of the JOURNAL. Reprints are available at 15 cents each.

REPORT OF THE COMMITTEE ON THE RELATION OF FOOD TO DISEASE

Read before the Food and Drug Section, American Public Health Association, at San Francisco, Cal., Sept. 16, 1920.

Obviously the first need is for plenty of good wholesome food of all sorts at prices as moderate as may be consonant with reasonably profitable production and marketing. Every encouragement should be given producers and manufacturers of food, and whatever may safely be adopted to keep down costs should be endorsed. Probably few people are satisfied that the methods of marketing in vogue today are not extravagant. The handling of food should be studied and the sanitary precautions advised should be made as simple as is possible without impairing their efficiency. We believe that food handling should be studied with the intent of discovering and employing sanitary procedures that are adequate and rational.

Besides being handled in an approved manner food should be free from infection. It is known that some foods may spread communicable disease but it is doubtful if our knowledge of the subject is as exact as it should be and the effort should be made to collate all available information in regard to it.

In the past the value of foods has been largely gauged by their calorific value but the researches of Mendel and Osborne, of McCullom and many others have radically changed the viewpoint; we are concerned as to the quality of the proteins and as to the vitamin content. It is suggested that the pediatricists of the Association prepare a bibliography of the subject for the use of physicians and with particular reference to the value of vitamin-rich foods in deficiency diseases of children.

One of the foods that is rich in vitamins is milk and moreover the facts that its calcium salts are readily assimilable and that it supplements cereal foods well, together with other valuable properties that it has makes it a most important item in the daily ration. In spite of all that has been written and said on the subject this fact has not been absorbed by the motherhood of America. Hitherto the influence of the A. P. H. A. on this question has in a sense been negative because of the imperative

need of securing clean, safe milk for the market. Chiefly through the demands of the health officers of the country simple inexpensive methods of producing clean milk have been developed and pasteurization has been widely adopted. It seems now as if the time had come for the Association to urge vigorously the liberal consumption of milk, cheese and all other dairy products. It is recommended that this Committee be requested to confer with the International Milk Inspectors Association and the International Milk Dealers Association to devise means for the furtherance of this object.

Commercial pasteurization of milk has been regarded favorably by the Association and when properly performed there is little doubt but that this view is warranted, but it seems patent that the time has come to study carefully the sanitation of pasteurizing plants. Unless apparatus is kept scrupulously clean, unless automatic temperature recorders are attached to the pasteurizing vats and the records preserved, and unless there is competent official inspection of the plant and process, the milk is apt to be worse instead of better after processing. It is advised that an effort be made to obtain from the members of this Association a comprehensive report on the character of milk turned out by pasteurizing plants within their jurisdiction with suggestions for improvement; it is advised further that an opinion of practicing physicians as to the success they are having with commercially pasteurized milk in infant feeding with particular reference to intestinal infection and scurvy be obtained.

In the pasteurization of milk there occurs in the vats a precipitation known as "milk stone" which is probably composed chiefly of calcium salts, but apparently no careful investigation has been made either of its character or whether this precipitation is in any degree responsible for some of the unfavorable results that have been obtained in feeding pasteurized milk to babies. Information on this matter is desired.

Reports from Massachusetts and New York indicate that the introduction of breeds of high producing cows has materially reduced the butterfat content of market milk. It is not known what is the best butterfat content for market milk; some communities are satisfied with 3.5 per cent whereas others demand 4 per cent and perhaps the tendency in some of the largest cities is to force it down to 3 per cent. It is becoming evident that a stand against this depressive tendency will have to be taken both in the interest of the trade and the consumer. It would seem that the time has come to require a statement of the approximate butterfat content of the milk on the bottle cap and to take consideration of the butterfat content in grading milk. One of the important questions confronting health officers of the Southeastern states, where grades of the Channel Islands breeds prevail, is what attitude they shall take in this matter.

In some dairy markets whose principal supply of cream is derived from distant sources, the cream is neutralized before shipment, neutralized again at the point of destination and then homogenized before being distributed. Such cream should be distinctively labeled.

The use of milk powder is steadily increasing. The conditions attending the production of milk for its manufacture should be closely scrutinized. Also, the retail packages should state the approximate butterfat content of the milk remade from the product according to directions and furthermore a statement of any substitution that may have been made for butterfat should be given on the package.

The question of substitution in foods is forcing itself to the front. For example, there are on the market canned products made of skim-milk homogenized with vegetable oils that are offered in the place of condensed and evaporated milks. One manufacturer at least, states on the label that part of the nutritive elements have been withdrawn and that the product is therefore not suitable for infant feeding nor for invalids. This practice should be generally adopted.

Substitutes for cane sugar, such as corn sugar, invert sugar and even saccharin, are coming into use. The progress that they make will be watched with interest.

The attention of the country has been focused on canned foods by the recent outbreak of botulism. An excellent report on this subject was made before this Section at the New Orleans meeting and nothing further than that satisfactory progress in the control is being made need be said at this time.

However, other problems are presented by these foods some of which are being investigated by members of this Committee.

In the first place it seems important to urge the public to examine carefully the content of containers on opening them for use, at the same time warning it, that not all spoiled food declares itself to the senses since the heating process may mask the warning odor. It seems certain that full knowledge of the causes of the spoilage of canned goods would enable the processes of preserving to be refined to the degree that the precaution of close examination of the contents would be unnecessary.

Those members of this committee who have worked on canned goods advise study along these lines:

1. A systematic study of the bacterial flora and a comparison of that of unspoiled with that of spoiled goods.
2. The determination of the relation of thermophiles to food decomposition.
3. Determination of the thermal death point at various pH values.
4. Investigation of the pathogenicity of organisms isolated from foods.
5. Testing for thermostable toxic products.
6. Further study of the sterilization of canned goods.
7. The coöperation of chemists in solving the problems involved should be sought.

The probable increased importance of dried foods seems to indicate the desirability of determining the conditions under which they are produced and how they may best be handled.

The Committee feels there is dire need for the development of "standard methods" of food control and analysis and it requests the Laboratory Section of the Association to take action at once to develop them.

The Committee would point out the need of developing a new standard agar medium for use in milk analysis, to meet the criti-

cism that has been offered that the present medium in high dilution does not contain enough nutriment to sustain good bacterial growth. It would urge that proper hydrogen-ion concentration for the medium be determined and also whether lactose should not be added to agar made from meat extract. The devising of such a medium would seem to require careful research and it is suggested that if the Laboratory Section has not the time and funds for the work, that the Association ask the Dairy Division of the Department of Agriculture

and the Public Health Service to co-operate in devising an agar medium suitable for use in making routine counts of market milk, paying special attention to the points above indicated.

In conclusion your Committee wishes to express its belief in the importance of its work and to ask for its continuance.

HORATIO NEWTON PARKER, *Chairman.*

GEORGE T. DEBORD.

FRANK C. GEPHART.

PERCY D. MEADER.

JOHN WEINZIRL.

LIST OF NEW MEMBERS

Proposed for Election to the

A. P. H. A.

June 1 to June 30, 1921, inclusive.

Names of Sponsors are set in **Bold Face Type**.

Names of New Members are set in **Light Face Type**.

CALIFORNIA

- J. W. Robinson, M. D., Los Angeles.**
 Arthur S. Baker, M. D., Los Angeles.
Edith M. Twiss, Poughkeepsie, N. Y.
 Ruth B. Fraser, Riverside.

CANADA

- Anthony McGill, Ottawa, Ontario.**
 Aimé Valin, Montreal, Quebec.

CONNECTICUT

- John T. Black, M. D., New London.**
 G. H. Joslin, M. D., Hamden.

CUBA

- Diego Meza, D. D. S.**
 Filemon J. Castellanos, Guadalajara, Mexico.

ILLINOIS

- S. H. Ezekelian, Chicago.**
 Albert K. Epstein, Chicago.
Edith B. Lowry, M. D., St. Charles.
 Margaret L. Hanley, Lambertton, Penn., Industrial Nurse.
 Helen Gage, Old Capitol Building, Jackson, Miss., Director Health Education.

INDIANA

- J. N. Hurty, M. D., Indianapolis.**
 J. T. Biggerstaff, M. D., Wabash.

KENTUCKY

- W. N. Lipscomb, Georgetown.**
 Charles H. Voorhies, Lexington, City Health Officer.

MARYLAND

- C. Hampson Jones, M. D., Baltimore.**
 Birkhead Macgowan, M. D., Supt. Sydenham Hospital, Baltimore.
John W. M. Bunker, M. D., Detroit.
 Henry G. Dunham, Detroit, Director Digestive Ferments Laboratory.

MINNESOTA

- C. D. Geidel, St. Paul.**
 August J. Anderson, Lindstrom.

MISSOURI

- Prof. C. E. Turner, Cambridge, Mass.**
 Maude Brown, Supt. of Hygiene, Public Schools, Kansas City.

NEW JERSEY

- E. I. Cronk, M. D., New Brunswick.**
 Louis A. Voorhees, New Brunswick.

NEW YORK

- R. B. Wakeman, M. D., Geneseo.**
 Mrs. Agnes D. Roberts, Health Sec'y, Livingston County, Geneseo.
Prof. H. N. Ogden, Ithaca.
 S. John Scacciaferro, Clifton, N. J., Sanitary Engineer.
Stephen Smith, M. D., New York.
 John P. Davin, M. D., New York.
Helen L. Palliser, M. D., Poughkeepsie.
 Nellie M. Britten, Poughkeepsie.

NORTH CAROLINA

- Guilford County, North Carolina Medical Society, Greensboro.**
 Anna M. Gove, M. D., Greensboro.

OHIO

- Hon. C. Ellis Moore, 15th District.**
 A. C. Sturgis, M. D., County Health Board, Marietta.

WYOMING

- C. D. Geidel, St. Paul, Minn.**
 Health Department, State of Wyoming, Cheyenne.

HEALTH INSTITUTE

The next issue of the **A. P. H. A. NEWS LETTER** will describe the Health Institute to be held in New York City one week before the Annual Meeting. Watch for the **NEWS LETTER**!

EMPLOYMENT BUREAU

HELP WANTED

Help wanted announcements will be carried free in this column until further notice. Copy goes to the printer on the 10th of each month for publication on the 20th. Mail to Boston office as early as possible.

In answering keyed advertisements, please mail replies separately to editorial office in Boston, Mass. In replying give age, professional training, salary requirements, previous positions held and three or more references.

Wanted: Full time county health officers. Salary \$4,000 and traveling expenses. Give age, education, training, experience and references. Address Director, Rural Sanitation, State Department of Health, Charleston, W. Va.

Wanted: Full time health officer for city of 60,000. Salary \$3,600. Car furnished. Address City Board of Health, Lansing, Michigan.

Wanted: R. N. Nurses with public health training for New Brunswick, Canada. Salary \$115 monthly. Apply to the Secretary Canadian Red Cross, 160 Prince William St., St. John, N. B.

Wanted: County Health Officer to take charge of thoroughly organized department in good Southern county. None but experienced man considered. Address 451, R. A. L., care of this JOURNAL, Boston address.

Wanted: Assistant bacteriologist for city laboratory in Connecticut. Experienced college graduate. Some knowledge of chemistry. Salary \$1,200. Position probably vacant September 1st. Address 452, S. V. A., care of this JOURNAL, Boston address.

Wanted: An assistant bacteriologist in a state laboratory. A thorough training in the bacteriological examination of water, milk and other foods, and in bacteriological diagnosis is required. Send applications to Dr. R. C. Salter, State Bacteriologist, 14 W. Saratoga St., Baltimore, Md.

POSITION WANTED

Positions wanted announcements will henceforth be carried in this column. The charge is \$2 per insertion. Copy should be received at this office by the 10th of the month.

State Health Officer, holding A.B., M.D., Dr. P.H., from standard universities, and

with six years' practical experience in public health work along broad lines, desires to make a change. Experience and references furnished. Address 159, S. F. H., care of this JOURNAL, Boston address.

Wanted: Position in bacteriological laboratory specializing in diagnosis. Have been connected with state and city in workings of pure foods and dairies as a bacteriologist and also in the profession of histology and pathology in medical colleges. Am a graduate of bacteriological and medical colleges. Can give highest references. Address 167, J. S. C., care of this JOURNAL, Boston address.

Wish to locate in city of some size preferably West or Middle West as full time health officer where pure public health administration uncontaminated by local politics will be appreciated. Have record for results. Work above board. Protestant. Director A. P. H. A. Age 41. M. D. Experienced in all phases of public health administration. References from leaders in public health. Available now. Address 169, O. C., care of this JOURNAL, Boston address.

Wanted: Position in industrial or public health administration by an M.D. who is also a graduate of the Harvard-Technology School of Public Health (C. P. H., 1921). Two years division director State Health Department; one year State District Health Officer, and ten years general medical practice with part time health work. Address 170, H. E. H., care of this JOURNAL, Boston address.

Wanted: Bacteriologist with 15 years' experience in public health, state and city. Two years' research in complement fixation at a leading university in the East. M.A. degree. Wants position the latter part of October (engaged until that time). Minimum salary, \$2,500. Address 171, B. T. G., care of this JOURNAL, Boston address.

Wanted: Position by laboratory experienced in routine work; graduate of standard university, and specially trained in public health work. Address 172, E. M. B., care of this JOURNAL, Boston address.

Wanted: Position in public health. Ten years' experience in municipal, state and government work, lately in industrial hygiene, U. S. P. H. S. Best qualified in

survey and epidemiological investigations, educational work and in preparation of articles and reports; also in dairy and school work. Experienced as health officer. Not a laboratory man. Alert, resourceful, practical; hold M.D. and Dr. P.H. from University of Pennsylvania. Address 173, W. B. H., care of this JOURNAL, Boston address.

Technician now at University in New York requires position here in bacteriological or chemical laboratory. Good knowledge of general and analytical chemistry. Excellent references. Minimum salary, \$1,200. Address 174, C. B. L., care of this JOURNAL, Boston address.

Bacteriologist and chemist wants position as city bacteriologist in some progressive town where the importance of efficient laboratory service is appreciated. Eight years' experience as a public health bacteriologist and chemist, one year in charge clinical laboratory with A. E. F. overseas. Capable of directing and handling all phases of public health laboratory work, clinical bacteriology and serology. At present chief assistant bacteriologist in city of over half a million. Desire to make change for good reason. Address 168, M. R., care of this JOURNAL, Boston address.



PUBLIC HEALTH NOTES

Abstracts by D. GREENE, M. D., M. P. HORWOOD, Ph.D., JAMES A. TOBEY and HOMER N. CALVER.

Medical Service in Alaska.—The United States Bureau of Education of the Department of the Interior employs physicians and nurses to deal with tuberculosis and other diseases among the native races of Alaska.

A physician in the Alaska medical service is required to supervise one of the small hospitals maintained by the Bureau of Education, or, under the direction of the district superintendent of schools, to make tours of inspection of the villages in his district, furnishing medical relief to the inhabitants, endeavoring to introduce and maintain sanitary conditions in the homes and villages and giving instructions to the teachers in the use of medicines and in the care of patients.

Nurses are required to assist the physicians in the care of the sick in the hospitals or native villages, to give instruction in hygiene, and to conduct physical exercises in the schoolrooms, and to visit the homes of the natives, instructing them in matters pertaining to health.

Salaries paid to physicians range from \$1800 to \$2800 and to nurses from \$800 to \$1400. The bureau desires at present to secure persons of good educational qualifica-

tions, successful experience, upright character, philanthropic motives, good judgment, and ability to do effective work under adverse conditions. Persons actuated by financial motives are not desired, and it might be remarked, not likely to be obtained. —*School Life*, U. S. Bureau of Education, May 1, 1921. (*J. A. T.*)



Etiology of Rickets.—Those who think that the etiology of rickets is already a closed book and that this disease is dependent entirely upon the diet should read this article. Dr. Findlay surveys the experimental and clinical evidence which exists at present concerning rickets and concludes that this disease cannot be placed definitely among the deficiency diseases, and that the fat-soluble vitamin A cannot be incriminated as the etiological factor. He presents evidence to show that the general condition of the home, as evidenced by the amount of air space per individual and cleanliness and a proper amount of exercise were important factors in correcting existing rickets, without paying attention to the nature of the diet. With our present state of knowledge we must say that the etiology of the disease is still *sub-judice*.—L. Findlay, *Arch. of Pediatrics*, March, 1921, 151.—(*D. G.*)

Division of Vital Statistics, Bureau of the Census.—The National Health Council is making a study of various Federal re-organization proposals and is collecting data in this connection. It has recently prepared and issued a report on the Division of Vital Statistics, U. S. Bureau of the Census, which bears date, Washington, June 1, 1921.

The Division of Vital Statistics, Bureau of the Census takes its legal authority from a Section of the act approved March 6, 1902, entitled "An Act to Provide for a Permanent Census Office." The act provided in effect that such statistics should be obtained only from registration records of states and municipalities which were satisfactory to the Director of the Census.

There was a death registration area in the country as early as 1880. This was enlarged in 1890 and again in 1900, so that it included at the date last named, the six New England States, Indiana, Michigan, New Jersey, New York, and the District of Columbia. Up to the present time, the death registration area includes 34 states, the District of Columbia, and 17 cities in non-registration states, or more than 80 per cent of the total estimated population of the U. S. Only three states remain with unsatisfactory registration laws, South Dakota, Nevada and Arizona, while 11 states have legislation and will be ready for admission as soon as they can show the required 90 per cent complete registration.

The first annual report on birth statistics related to the year 1915, although before that time they had been noted in the decennial census reports. In 1915 a birth registration area was created which now includes 25 states and the District of Columbia, or more than 60 per cent of the total population.

The principal work of the Division of Vital Statistics is the compilation of birth and death statistics. It prepares Life Tables, encourages and promotes uniformity in local registration laws for birth and deaths, issues weekly reports of deaths occurring in 60 of the larger cities, makes special studies and coöperates in the statistical work of other governmental departments.

The birth and death statistics are gathered only from the registration area. A state or city is admitted to the registration area if on investigation it is found that 90 per cent of the actual births or of the actual

deaths have been reported. The statistics of the bureau are based upon local records. It has been active in urging the adoption of standard forms for birth and death certificates with considerable success. Reports of birth and death statistics are published annually by calendar years, there being two separate volumes.

An important function of the Bureau of the Census has been in promotion work which consists in educating societies, legislatures, and the public generally with reference to the importance of complete registration. It also employs check methods to verify the accuracy of the statistics regularly.

One of its important functions is the publication of an American edition of the Manual of the International List of Causes of Deaths, the standard authority. The Chief Statistician represented the Division at the International Conferences in Paris in 1909 and 1920 for the revision of the International List. The Division also publishes the Index of Joint Causes of Death and the Physicians' Pocket Reference, and Life Tables, the first of which was in 1916, referring to the year 1910. It issues the Weekly Health Index, multigraphed statements of the mortality in the 60 of the largest cities. These statements show the total number of births, the comparison with prior periods, the estimated populations, the death rate per year, the number of deaths of individuals under one year old and the estimated infant mortality rate. Monographs are published from time to time on subjects related to vital statistics. Among these may be noted those related to cancer, influenza mortality, and the standard nomenclature of diseases and pathological conditions.

The Division is under the Director of a Chief Statistician, W. H. Davis, M. D., with a personnel of 124. The Chief Statistician is assisted by an expert Chief of Division in charge of clerical and field corps. The Division is a complete unit in itself and is related to the rest of the Bureau of the Census only in that it obtains from the Division of Population and from the Geographer facts of population for Census and intercensal years for purposes of calculating rates. It has an appropriation of \$825,000 for the three years constituting the decennial census period, the

first year of which ended June 30, 1920. This amount is divided into \$250,000 yearly and \$75,000 for printing.

The Division of Vital Statistics coöperates with other statistical divisions in the government, including divisions in the Public Health Service, Children's Bureau, and the Bureau of Labor Statistics. It also works in active coöperation with non-governmental agencies, among them, the American Public Health Association, the American Medical Association, the American Statistical Association, the American Bar Association, and State Public Health Associations and Medical Societies.



Popular Health Instruction.—Public health education is growing in importance and extent. It is important for the information of the people in the methods of disease prevention and in desirable hygienic practices. It is necessary too, for the expectant mother, for the mother after the child has arrived, and for children themselves. By means of this propaganda children acquire desirable health habits that remain with them throughout life. The education however must be fitted for the individual whom it is meant to reach, and must arrive at a psychological moment when the individual is receptive.

The most important methods of popular health instruction are:—1. bulletins of value to those already engaged or interested in public health activities; 2. pamphlets for children; 3. pamphlets for adults; 4. posters, drawings and cartoons to stimulate popular interest; 5. instruction in school by regular courses and by special lectures. 6. mass meetings and lectures to the general public; 7. pictures and lantern slides; 8. publicity in newspapers and periodicals; 9. exhibits; 10. novelties. Motion pictures that are scientifically accurate and interesting are considered of prime importance in the educational campaign. Novelties, on the other hand, such as Punch and Judy shows, clowns, health games, and tag days are considered to be of little and evanescent value.—Edward Stuart, *International Journal of Public Health*, March-April, 1921.—(M. P. H.)



Accident Deaths in the United States.—That accidents kill more people in the United

States in one year than the much-dreaded scourge of cancer is shown by a compilation of statistics by Miss M. M. Hulst, statistician of the American Red Cross. The toll of accident deaths in 1918, the latest year for which figures are now available, was about 83,000.

Automobile fatalities have increased ten-fold during the last decade, according to the data. Ninety people out of each million of population were killed by automobiles in 1918 as compared with ten per million annually from 1906 to 1910. Although slaughter by automobiles has thus increased, the safety movement in America has appreciably reduced the number of deaths on railroad and trolley tracks.

The following table, prepared from mortality statistics of the Bureau of Census, shows the number and percentage distribution of deaths from accidents of various kinds in the United States in 1918, in which year accident deaths constituted 4.6 per cent of the deaths from all causes:

Cause of Accident	Number	Percentage
Total accident deaths . . .	83,852	100.0
Railroad and Street Car . . .	13,762	16.4
Falls	13,070	15.6
Automobile	9,445	11.3
Burns	8,418	10.0
Drowning	6,952	8.3
Absorption of deleterious gases	4,247	5.1
Mining and quarrying	3,293	3.9
Machinery	3,002	3.6
Vehicles (other than automobiles)	2,797	3.3
Poison	2,787	3.3
Firearms	2,561	3.1
Conflagration	11,799	2.1
Other accidents	11,719	14.0

(J. A. T.)



Lunch Hour at School.—Teachers are beginning to regard the school lunch as a health project that should be given a prominent place in the curriculum, and is not merely a temporary help to the less fortunate children. The conclusions are based on a survey in the schools in various parts of the country.—Katherine Fisher, *Lunch Hour at School*, Child Health Organization. (M. B. D.)

Lead Poisoning from an Unusual Source.

—Two men employed in a tanning establishment in Newark, N. J., were reported by a physician as suffering from plumbism. The typical symptoms, colic, constipation, nausea, metallic taste, anemia and palsy, blue line on gums, etc., were present, but the source of the disease was a mystery. No such poisoning had ever been recorded in a tanning factory and no lead was known to be used in any of the factory processes. Finally, it was discovered that the two men were employed in tacking skins on wooden frames. The nails they used were analyzed and found to have a coating which contained 82% lead as a rust preventive. The men had been in the habit of holding these nails in their mouths during the tacking process. A striking feature was the time required for the disease to develop, the men having been employed on this work for 10 and 12 years respectively. The duration of the disease in one case was reported as two years or more and in the other about two weeks.—*Monthly Bulletin, Newark, N. J., Department of Health*, Feb., 1921.—(J. A. T.)

**Laundry Processes and Vermin.**—The authors

describe in detail experiments carried on with body lice and their eggs to determine whether these could be killed by ordinary laundry processes without injuring the infested woolen fabrics. Summarizing the experiments with the wash wheel it was shown that all lice and eggs can be killed in the laundry wash wheel alone by washing at a temperature of 131° F. for 15 minutes, and rinsing three times at the same temperature. The experiments with the drying tumbler indicated that the drying tumbler is an effective and non-injurious part of the process of cleaning woollens and of disinfecting and killing insects when the clothing is treated wet, but that it is not desirable to use the drying tumbler as a preliminary measure in the disinfection and disinfestation process, or as the only measure, because of the effect of dry heat on the shrinkage of woollens. The effect of finishing processes was also studied and it was found that ordinary ironing and the work of the steam press are effective when the work is done carefully. The authors give a complete washing formula, which is effective and does not unduly shrink woolen clothing.—Pierce, Hutchinson and Moscovitz, *U. S. P. H. Reports*, 36, No. 14.

Physical Defects in Children.—One of the objects of the investigation reported by Emerson was to emphasize the importance of more thorough and systematic physical examinations for all children. A standard form has been worked out which covers all the practical points in regular order, enables different examiners to cover the same ground, saves clerical work by so arranging descriptive matter as to allow underlining instead of writing and acts as a check on the work of the examiner since a failure to underline an item shows failure to examine. The report is based on 602 cases. Children reported to be sufficiently well to attend school and to engage in the ordinary activities of normal children, were found to average 5.2 physical defects of all kinds, and 2.5 nasopharyngeal defects. Children brought to a hospital clinic for examination and treatment showed an average of 6.8 defects of all kinds and 3.5 nasopharyngeal defects. The distribution of number of defects according to age was remarkably uniform. In each of the above two groups studied the largest number of children were between the ages of 7 and 9. Only 9 children of the 602 examined were found to be free from physical defects.—W. R. P. Emerson, *Amer. Jour. of Diseases of Children*, March, 1921, 282.—(D. G.)



Splash Week in New York City.—The Metropolis has just had the interesting experience of a "splash week," during which every person in the city was offered the opportunity of free instruction in swimming. This campaign was undertaken with an idea of lessening the mortality due to summer drowning accidents and is worthy of imitation in all other populous centers with boating and bathing facilities. Last year there were 331 persons drowned in the vicinity of New York, and most of these accidents would have been avoided had the victim had the rudiments of swimming as a part of his education. Then again numbers of drowned persons might have been resuscitated had the bystanders learned the principals of resuscitation.

Splash week was conducted by the New York County Chapter of the Red Cross, with the coöperation of the city authorities, the various Christian Associations and other organizations. Practically every swimming pool in the city was opened to the public without charge for the six days.

Pneumonic Plague in the Far East.—An appeal to the authorities of the American Red Cross gives information that a serious outbreak of pneumonic plague has broken out at Vladivostok. Definite information is as yet lacking.

Pneumonic plague, known to medical science for only a decade, has once before visited the Far East, exacting a terrible toll of lives before an international commission of medical experts found means of checking it. That was in the winter of 1910-11. Appearing without warning in Manchuria the pestilence, which strikes and kills with almost unbelievable speed by corrupting the lungs and bringing death within a few hours from the onset, spread the utmost terror among the helpless natives and even caused grave concern to the world at large.

Unable to cope with the situation the Chinese government appealed to the nations of the world. In this country the State Department turned to the American Red Cross, which commissioned Dr. Richard Pearson Strong who holds the chair of tropical medicine at Harvard University Medical School and who at that time was studying tropical diseases in the Philippines, to proceed to the stricken area as its representative. Accompanied in his dangerous mission by his assistant, Dr. Oscar Teague, Dr. Strong spent five weeks studying the plague at first hand before the international commission of experts met at Mukden to begin an organized fight against the visitation. To carry on their work with any degree of safety it was necessary for the medical men to work in all enveloping protective garments with four inches of cotton wadding over the mouth and nose to exclude the fatal bacilli.

The report of the international commission traced the outbreak to the Russian tarbagan, or marmot, which had long been known to be the victim of a mysterious malady and from which Manchurian hunters were found to have contracted the plague.



Engineering Aspects of Public Health.—

According to the writer, public health comprises medicine, sanitary engineering, law, education, statistics and sociology. In the spread of disease, there are two main factors, man and environment, each involving, respectively, personal hygiene and sanitation, which in turn require the attention

of the physician and the sanitary engineer. Sanitary Engineering includes water supply, sewage treatment, refuse disposal, industrial environment, housing, city planning, rat-proofing, control of diseases, such as malaria and yellow fever, and public health administration. A chart is given showing the public health problem and its solution.—James A. Tobey. *Engineering News-Record*, 86-16, April 21, 1921, 668-70.



Tree-Breeding Anophelenes.—The author points to the fact that in a survey for anophelene mosquitoes in any area where trees, even in small numbers, are present, any forms which pass their early stages in trees must be considered equally with the forms which pass these stages in the water. Without the information with regard to the tree-breeding anophelenes the survey is incomplete and adequate remedial measures cannot be applied. An examination of trees for the purpose of detecting possible anophelene breeding places involves very close inspection of all parts of the tree and its larger branches to a level as yet not determined, but higher than 32 feet from the ground. Generalization with regard to the rise or fall of malaria in any area (whether marshy or not) which contains trees may be very misleading if such effects on anophelene breeding places as may result from tree felling, tree planting and decay of trees are omitted from consideration.—B. Blacklock, *Lancet* Mar. 12, 1921, 530. (D. G.)



A Quantitative Serum Reaction for Diagnosis of Syphilis.—A comparatively simple serum reaction for the diagnosis of syphilis is described. The results obtained are quantitative as well as qualitative and compare more than favorably with the Wassermann reaction. The reaction can be standardized and the results can therefore be expressed in standard units, thus allowing direct comparison of the results obtained by various workers. It is then possible to follow accurately the changes in the unit content of the serum in a case of syphilis under treatment, and in this way to ascertain whether clinical improvement is regularly accompanied by a fall, and an exacerbation by a rise in the unit content of the serum.—G. Dreyer and H. K. Ward, *Lancet*, May 7, 1921, 956. (D. G.)

STATE HEALTH NOTES— LEGISLATION

National Congressional Procedure. From Report of National Health Council, indicating action up to June 7, 1921.

NEW LEGISLATION

Denunciation of International Sanitary Convention of 1903. The Senate in executive session on May 26, 1921, acted on a presidential message of May 17, 1921, and by a two-thirds vote formally denounced the International Sanitary Convention signed at Paris, December 3, 1903. The provisions of this treaty were considered inimical to the interests of this country. The ports of the United States were not protected by the treaty from the introduction of plague, cholera and yellow fever from abroad. The records of the Public Health Service do not indicate that any of the countries signatory to the convention have ever complied with the obligation to notify the other governments of the first appearance of these diseases in their territories. There was also a later convention in Paris, based on more modern conceptions of sanitary science which was signed January 17, 1912, and ratified by the United States. This 1912 Convention remains in force.

H. R. 6566. To Permit Deductions on Income Tax for Medical Expenses. Introduced by Mr. Rosenbloom May 24, 1921. Referred to the Committee on Ways and Means.

This bill allows the citizen with a net income less than \$5,000 to deduct, in computing his personal schedule, all expenses incurred for sickness and death. It exempts from taxation the expenses for medicines, bills paid to physicians, surgeons and hospitals, and funeral expenses not exceeding \$1,000 in the aggregate in any one taxable year.

S. 1882. The Honest Emergency Act of 1921. Introduced by Senator Lodge May 20, 1921. Referred to the Committee on Interstate Commerce.

The purpose of this bill to create a Federal law making it a penal offense in this country to misbrand, misrepresent or falsely describe any articles sold in the United States. It applies to advertisements in newspapers and magazines as well as to descriptions of contents of packages. The

penalty for violation of the offense is a fine not to exceed \$1,000 or a sentence to Federal prison not to exceed one year.

S. 1944. Incorporating "Light Houses for the Blind." Introduced by Mr. Warren on June 2, 1921. Referred to the Committee on Judiciary.

This bill proposes the incorporation of an organization to help "the blind in the United States and throughout the world through their physical and mental betterment, through the development of methods and plans for their education and instruction, and through the opening of new trades and other occupations for their employment." The corporation will be shown as "Light Houses for Blind." The incorporators include publicists and leading philanthropists in the United States.

S. 1887. Introduced by Mr. Calder on May 20, 1921. Referred to Committee on Interstate Commerce.

This bill extends the authority of the Food and Drug Act of June 30, 1906, so as to prevent the law of any State or City from interfering with the sale of any foods, drugs, or medicines in package form which have been transported in interstate commerce and thereby become subject to the Federal law, and which are not adulterated or misbranded within the meaning of the act.

Seven other bills only indirectly concerned with public health have been recently introduced into Congress, one of which is intended to establish a Bureau of Construction and Housing in the National Bureau of Standards; another extends the Compensation Law to Government employees; a third is to investigate the American Red Cross in New York and others have reference to quarantine stations and hospitals.

PROGRESS ON MATTERS PREVIOUSLY CONSIDERED

H. R. 6611. The Sweet bill creating a Veterans' Bureau has been favorably reported. (H. R. 1004.) This is the third bill by Mr. Sweet, introduced May 25, 1921. Favorably reported on May 27. Discussed in the House June 3, but no action taken. The Committee on Interstate and Foreign Commerce recommends that this bill pass the House on the ground that it unifies and brings under one head all the government agencies established for the benefit of the

disabled soldiers of the country. The first 14 sections provide for the establishment in the Treasury Department of a new bureau to be known as the Veterans' Bureau, the Director of which shall be Assistant Secretary of the Treasury. These sections provide for the consolidation into one bureau in the Treasury Department of the Bureau of War Risk Insurance, the Rehabilitation Division of the Federal Board for Vocational Education, and so much of the Public Health Service as relates to the examination, assignment to hospitals, and welfare of persons who served in the World War, who are now or have been patients of the Bureau of War Risk Insurance or Rehabilitation Division. The bill makes provision in addition to the centralization at Washington, for the decentralization in the field. Provision is made for the establishment of 14 regional offices and such offices not exceeding 50 in number as may be deemed necessary by the Director.

H. R. 6300. The Second General Deficiency Bill for the fiscal year ending June 30, 1921. Passed by the House, May 26, 1921. Reported in the Senate with amendments on May 31, 1921.

One of these amendments provided for an appropriation of \$425,000 for the Interdepartmental Social Hygiene Board. Of this sum \$25,000 is for the expenses of the Board; \$200,000 for assisting the States in protecting the naval and military forces of the U. S. against venereal diseases and \$200,000 for allotment to the various states for the prevention, treatment and control of venereal diseases. These sums are for the fiscal year 1922. The amendment was passed in the Senate June 3, 1921. The House will have to act on the amendments to the bill before it becomes a law.

H. R. 6752. Legislation supplemental to National Prohibition Act. Favorably reported H. R. 133. This bill was substituted by Mr. Volstead for H. R. 5033 on June 1, 1921, and favorably reported by the House Committee on the Judiciary on June 2, 1921.

The report declares that the main purpose of the measure is to prohibit the use of beer as medicine and that it is necessary for the enforcement of prohibition because of an opinion of Ex-Attorney General Palmer which would permit the sale of this beverage on a physician's prescription. Sec-

tion 2 of the bill relating to doctors and physicians was changed from its original form by the Committee to the following:

"No physician shall prescribe, nor shall any person sell or furnish on any prescription, any vinous liquor that contains more than 24 per centum of alcohol by volume, nor shall any one prescribe or sell or furnish on any prescription more than one-fourth of one gallon of vinous liquor, or any liquor that contains more than one-half pint of alcohol, for use by any person within any period of ten days. No physician shall be furnished with more than 100 prescription blanks for use in any period of 90 days, nor shall any physician issue more than that number of prescriptions within any such period unless on application therefor he shall make it clearly apparent to the Commissioner that for some extraordinary reason a larger number is necessary, whereupon the necessary additional blanks may be furnished him."



National. *Congressional Procedure.*—National Health Council Report Brought Down to June 22, 1921.

NEW LEGISLATION

S. Res. 59. Investigation of Soldier Relief. Introduced by Senator Walsh. Passed the Senate June 9, 1921. It authorizes that a committee of five Senators, three from the majority and two from the minority party be appointed to investigate all bureaus and agencies of the government dealing with the care, treatment, insuring, compensating, rehabilitating, and hospitalizing of the veterans of the World War. The committee is to investigate specifically the manner, methods and scope of the activities of the Bureau of War Risk Insurance, the United States Public Health Service and the Federal Board for Vocational Education. The Vice-President appointed Senators Sutherland, Calder, Weller, Walsh and Pomerene to this Committee on June 10, 1921.

H. R. 7159. Former Army Medical Officers Authorized to Practice in any Territory of United States. Introduced by Mr. Patterson June 15, 1921. Referred to Committee on Territories. This bill gives the right to physicians and surgeons honorably discharged from the United States Army, who are graduates of a recognized medical college and who hold a license in any state,

to practice medicine and surgery in any territory, district, dependency, or possession of the United States. A sworn statement as to the qualifications specified must be presented to the Secretary of the Interior, who will issue a certificate which is good before the licensing board of any of the territories.

H. R. 7156. Prohibits Interstate Sale of Articles Contaminated with Anthrax. Introduced by Mr. Winslow, June 15, 1921. Referred to the Committee on Interstate Foreign Commerce. This measure has been advocated by the U. S. Public Health Service for a long time in order to prevent the spread of anthrax in this country. The bill prohibits the importation and also interstate traffic "in shaving or lather brushes which contain horsehair."

S. 1971. This bill provides care for Government Civilian Employees stricken with tuberculosis. Introduced by Senator Shepard June 6, 1921. Referred to Committee on Civil Service. This bill permits all civilian employees of the government, who are stricken with tuberculosis while in the service, to be admitted into hospitals under the operation of the Army, Navy or Public Health Service.

H. R. 7112. Regulation of Cold-Storage Foods. Introduced by Mr. Haugen. Referred to the Committee on Agriculture. This proposed act, entitled the "United States Cold Storage Act," is designed to prevent hoarding, deterioration, deception and fraud in the storage of products of all variety. It also regulates the shipment and commerce in cold-storage foods. The Secretary of Agriculture is designated as the authority for enforcing the terms of the act and a necessary appropriation is made to cover the expense. He is given power to investigate the handling, grading, storing and transportation of certain foodstuffs such as poultry, fish and oysters, eggs, butter, oleomargarine and other butter substitutes, cheese and other perishable farm products, and to issue certificates of standardization.

H. R. 6961. Granting Certain Lands in the State of Alabama for the Use of the Searcy Hospital for the Colored Insane. Introduced by Mr. McDuffie on June 8, 1921. Referred to the Committee on Public Lands.

PROGRESS ON BILLS PREVIOUSLY CONSIDERED

H. R. 6300. Second Deficiency Appropriation Bill. This bill with amendments was finally agreed to in the House on June 11 and in the Senate on June 13, 1921. The bill as finally passed contains the following matters concerning public health:

(a) Bureau of War Risk Insurance:

For Medical and Hospital Services—\$8,710,272. Repeal of provision of the act providing for additional hospital facilities, which was passed by the last session of Congress and which limited expenditures to \$6,100,000 for remodeling and extension of existing plants. This act is so amended that the Secretary of the Treasury is now authorized to expend the entire sum upon either new hospitals or in the extension of the old ones, at his discretion.

(b) Public Health Service:

\$309,000 is appropriated to the Public Health Service to enable the President to aid State and local boards, or otherwise in his discretion, in the prevention of actual or threatened epidemics of cholera, typhus fever, yellow fever, smallpox, bubonic plague, Chinese plague or black death, trachoma, influenza or infantile paralysis.

(c) Bureau of Animal Industry:

For expenses in connection with the eradication of tuberculosis in animals, \$405,000.

(d) Interdepartmental Social Hygiene Board:

Appropriation is made for a continuance of the existence of the Interdepartmental Social Hygiene Board. Congress confines the activities of the Board to protecting the military and naval forces of the United States against venereal diseases and allots \$200,000 to be used exclusively for this purpose, \$25,000 is allowed for expenses of administration. Congress eliminated the proposed allowance of an additional \$200,000 to be allotted to the various States for the prevention and control of venereal diseases. The result of this action is that the various State Boards of Health and municipal welfare or-

ganizations will not receive any funds during the next fiscal year from the Federal Government to combat venereal diseases. Such funds must come from state or local governments or voluntary sources.

(e) Public Buildings:

For quarantine stations in New York, \$500,000; Baltimore, \$25,000; and Boston, \$150,000. \$500,000 is already appropriated for the improvement of the Broadview Government Hospital at Chicago, Illinois. \$750,000 is appropriated for the buildings of the Dawson Springs Sanatorium, Dawson Springs, Ky., now under construction as a hospital for disabled soldiers. The additional sum is to be used in constructing the principal buildings of fire-proof material instead of wood.

H. R. 6611. The Sweet Bill for Establishment of Veterans' Bureau. Passed unanimously by the House of Representatives June 10, 1921. It went to the Senate and was referred to the Committee on Finance. The original bill provided for a central office in District of Columbia with fourteen regional offices and forty sub-offices. Through an amendment the number of sub-offices was increased to 140.

H. R. 5033. Volstead Bill Supplementing National Prohibition Act. This is the bill which prohibits prescription of beer for medicinal purposes.

Public Resolution No. 54, Sixty-sixth Congress. Smoot-Reavis Joint Congressional Committee on Reorganization. Opposition of certain bureau chiefs and federal employes to the work of reorganization of the various departments led to the consideration of this supposed propaganda at a meeting of the President's cabinet on June 14, 1921. The result of this conference was an order issued by the Executive to the departmental heads to discharge all Federal employes who indulge in this practice. An announcement, very definite and concrete, was made that the new administration proposed to bring about a complete reorganization of the various departments and the bureaus of the government.

Walter F. Brown, who was chosen at the instance of President Harding as the Chairman of the Smoot-Reavis Committee, has

established his offices in the Widner Building on Seventeenth Street, Washington, D. C. He will also have offices in the Senate Office Building. The National Health Council has prepared a new chart showing the health activities of the U. S. Government at Mr. Brown's request and is supplying other information to the Committee. Mr. Brown has also prepared a chart showing the duplications and overlapping of functions of all the Departments and Bureaus of the Government.

S. Res. 77. King Resolution for Investigation of Lobbying Activities. Referred to the sub-committee of the Judiciary of the Senate.

H. J. Res. 148. Relief for Flood Sufferers of Colorado. Prompt action was taken by the Senate and the House in authorizing the Secretary of War to take temporary sanitary measures and to furnish supplies for the relief of the flood sufferers and destitute families in Colorado, victims of the overflow of the Arkansas River. The resolution passed the House on June 7, 1921, and the Senate on June 8, 1921.

S. 1944. Lighthouses for the Blind. The Committee on Judiciary has announced that a General Law already exists in the District of Columbia in which this incorporation can be effected. The Committee will, therefore, recommend that this be done rather than the enactment of a special law.



National. The U. S. Public Health Service presents the status of legal liability for conveying infection as shown by court decisions in different states.

In Oklahoma a man has been sentenced to five years in the penitentiary for infecting a girl with syphilis. In Nebraska the court upheld a doctor who warned a hotel keeper that one of his patients, a guest at the hotel, had syphilis and had refused treatment and was consequently a menace to the public health. In North Carolina a woman has been awarded \$10,000 damages against her husband for a similar infection and the Supreme court has upheld the judgment.

The Nebraska case is important because it asserts that a physician's duty to protect the public health may, under certain circumstances, transcend his duty to hold his patient's confidence inviolable. The North

Carolina case is also important because it sets aside in this particular case the legal barrier that prevents a wife from testifying against her husband and bringing suit against him.

All three cases are valuable in counteracting incorrect statements, often made, that the venereal-disease law falls almost exclusively on women and lets men go free. State laws of course govern in all such cases but the fact that every state in the Union has now adopted many if not all of the venereal disease laws, gives ground for expecting similar action in other states. Certainly the wide dissemination of the three decisions should go far to curb diseased persons who deliberately expose others to infection.

The fact that the North Carolina decision makes it likely that marriage will henceforth be no adequate defence against a suit for transmitting infection will probably hasten the adoption by the States of laws requiring every applicant for a marriage license to present a certificate by a reputable doctor certifying that he is free from venereal disease and providing that without this no license shall be issued.

Twenty States have already adopted laws forbidding persons with venereal disease to marry, seven of these, New Hampshire, New Jersey, North Carolina, Oregon, Washington and West Virginia, having acted during the present year's sessions. A similar bill is now pending in Florida.

All of the States do not require medical examination and certification that the applicant is free from venereal disease. "Such a certificate should be required in every State," insists the Public Health Service. "Any decent man with an uncured infection who marries does so either because he does not realize the seriousness of his action or because he believes that he is cured. The necessity for an examination should bring its seriousness home to him and should be welcomed by him as a protection for his wife and children. No real man should object to a medical examination required by law."



California. On May 23, 1921, Governor Stephens signed the bill introduced by Senator Crowley, which provides for the repeal of the Vaccination Act of 1911. The burden of the control of smallpox is thus

placed on the State Board of Health instead of on the local authorities.

Dr. Walter M. Dickie, Secretary of the California State Board of Health, says, regarding the repeal of this act: "The schools of the state, under the old law, have lost large sums of money through lack of attendance whenever smallpox appeared in the district. Many pupils, through absence, have been deprived of a necessary part of their education and have been retarded in their work causing them, in many cases, to drop school work before completing their courses. In addition, many high school students have lost their graduation because of the working of this act.

"The State Board of Health will now place smallpox control upon the same basis as the control of any of the other communicable diseases. This will simplify the work of health officers and teachers, will facilitate quick action in stamping out the disease whenever it may appear and will eliminate the red tape and the clumsy features of the old law.

"There were nearly 4,500 cases of smallpox in California last year, and during the first quarter of 1921 the disease was more widely prevalent than ever before in the history of the state. In order that the disease may be brought under control quickly the general public is asked to coöperate with the local health officers in the strict enforcement of the State Board's regulations."

The Vaccination Act, approved March 7, 1911, now repealed, required that any child or person enrolled or received or employed in any school, college, university or other educational institution, public or private, should file with the proper authorities, a certificate of successful vaccination within seven years, or an annual certificate of conscientious objection, or a physician's certificate of possible injury from vaccination. In default of filing one of these certificates the child could be excluded from the schools.

When smallpox existed in any county, city or school district, the State Board of Health could exclude from the schools all children or persons not successfully vaccinated, and others who had been vaccinated were excluded if it so directed. If, however, there were two or more schools in the district or city unvaccinated persons

were permitted to attend the schools in which smallpox has not appeared.

There was a penalty clause for violation of provisions of the act, provision that a person who "has used due diligence and cannot be successfully vaccinated," should be exempt on presentation of a physician's certificate, and option was given that institutions enforce their own rules for excluding all unvaccinated persons.

The original act of February 20, 1889, was repealed by the act of March 7, 1911. It was entitled, "An act to encourage and provide for a general vaccination in the State of California."

Governor Stephens has signed Senate Bill 222, introduced by Senator Crowley, which provides for the establishment and maintenance of a division of Dental Hygiene for Children under the direction of the State Board of Health. This Division will have the power to investigate conditions of dental hygiene affecting the health of the children of the state and to disseminate educational information relating thereto. It will advise all public officers, organizations and agencies interested in the health and welfare of children within the state of California.



Missouri.—The Physical Education Act has been passed by the General Assembly, but no appropriation accompanied the passage. This may not be necessary if there is leeway in the present appropriations of the State Superintendent of Public Schools sufficient for the administration of such functions as come within the scope of his office. The act is inclusive, providing as it does for the physical education of all children in all educational institutions receiving funds from the State, others being explicitly exempted, an education which is to include the inculcation of health habits, the making and recording of periodical physical examinations, and the promotion of corrective measures. Other functions to be exercised are the teaching of personal and school hygiene and sanitation; promotion of playground interests, health supervision and nurse service; and promotion of general physical welfare. Provision for the requirement of the certification of the health of school teachers is made.

For administration there is to be a State

Director of Physical Education under the direction of the State Superintendent of Public Schools, and local school boards may employ a Supervisor of Physical Education. County, city and town school boards are empowered to raise money and expend the same in carrying out the provisions of the act.



Pennsylvania.—The bill passed by the Pennsylvania legislature, authorizing counties to establish and maintain hospitals for the treatment of persons afflicted with tuberculosis, has been approved by Governor Sproul. This measure, which means a long step forward by Pennsylvania in its effort to control tuberculosis, was drawn by the State Department of Health in conference with the Pennsylvania Tuberculosis Society. The act provides that upon petition of 100 or more citizens of a county, the County Commissioners shall, at the next election, submit to the voters the question of establishing a tuberculosis hospital. If the vote is favorable the County Commissioners are to prepare plans for the hospital and to select and purchase a site, all of which are to be approved by the State Commissioner of Health. The hospital is to be maintained by a Board of Trustees consisting of five persons named by the Court of Common Pleas. The County Commissioners can issue bonds to provide the hospital and shall levy an annual tax for maintenance. It is expressly provided that free treatment is to be given persons unable to pay, but that compensation may be collected from those able to pay. The Pennsylvania Tuberculosis Society, in coöperation with the State Department of Health, is taking an active part in assisting counties to take advantage of the law. Petitions have already been circulated in several counties and there will be a referendum in at least half a dozen counties next fall.



Wyoming.—A law has been passed providing for a whole-time State Health Officer. The 1921 Legislature has passed a law compelling every male applicant for marriage license to produce a certificate from a physician licensed in the state showing the applicant to be free from venereal disease in a communicable stage.

STATE HEALTH NOTES— GENERAL

National. The U. S. Public Health Service has issued the following notice with reference to its proposed Health Institute, which gives its own information.

The proposed Public Health institute which the Service contemplated holding in Washington, D. C., during the fall of 1921, has been indefinitely postponed. This action has been decided upon after several conferences between officers of the service and officers of the American Public Health Association.

The Fiftieth Annual Meeting of the American Public Health Association is to be held in New York City, November 14-18, 1921. Several other activities are planned by the Association in connection with its semi-centennial meeting in November, 1921, and it was at the request of the American Public Health Association that the Service institute for next fall was abandoned.

The Service hopes that it will be possible to arrange to hold a similar institute in Washington during the spring or fall of 1922.

Hospital Program of the U. S. P. H. Service.—This program is moving rapidly. Nine new hospitals, which will accommodate more than 3,000 patients, are now being put into shape for early occupancy. Three of these, in Iowa, Montana, and Oregon, with a capacity for about 500 patients, should be in operation within two or three months. Others will not be ready for a longer time. Especially will this be the case with three Army reservations, two of which had been abandoned for 10 to 20 months, which were specifically transferred to the Service by Act of Congress.

The Colfax (Iowa) hotel, with 130 acres of grounds is to receive 200 patients. The Army Hospital at Fort William Henry Harrison, Montana, will care for 100, with the likelihood that it will be greatly expanded. The Hahnemann Hospital at Portland, Ore., to have been ready by this date, will accommodate 164 general patients and the Speedway Hospital, Chicago, about 1,000 general patients.

Fort Walla Walla, Wash., is to be fitted up for 280 tuberculous patients and Fort

McKenzie, Wyo., and Fort Logan H. Roots, Ark., will be prepared for about 600 mental cases each. These three posts will probably be ready for occupancy within six months. A naval station at Gulfport, Miss., taken over by the U. S. P. H. S., is to be utilized as a hospital.

Bad Conditions in Child Labor.—The processes of Federal law administration have brought automatically into view the vicious circle of child labor, illiteracy, bodily feebleness and poverty. This statement is made in a report on the "Administration of the First Federal Child Labor Law" by the U. S. Department of Labor through the Children's Bureau. As a necessary aid in the intelligent enforcement of this law a body of important material was collected showing the conditions under which children go to work.

Many of the children who were found underweight when examined by a physician, had been working in mills for several years. Some gained quickly when taken out of the mill and put on a better diet. With others it was difficult to reach even the low standard which the physical requirement demanded. Many of the parents to whom physical defects in their children were reported were unable to pay for medical attention, and in most cases no public clinics were available to lend assistance.

One-fifth of the children in five States examined left school when they were in the fourth grade; almost a tenth of them had never attended school or had not gone beyond the first grade, and only one twenty-fifth had attended the eighth or a higher grade. Their educational equipment was even more limited than the grade which they last attended would indicate. While 1,803 children expecting to go to work had not advanced further than the first grade even when they had gone to school at all, 3,379 could not sign their names legibly and 1,915 could not sign their names at all. Over one-fourth of the children would have been refused certificates if ability to write their names legibly had been a requirement.

Uncle Sam's Model Village.—The first annual report of the health department in the model village which the U. S. Public Health Service has been developing for nearly two years on the 516-acre Government reserva-

tion at Perryville, Md., shows some interesting facts.

The reservation was used during the war as a site for a huge nitrate plant. The buildings included 200 cottages, two general stores, a model school house, club, firehouse, and theater for the employes. The whole reservation was turned over by Congress to the Public Health Service for a hospital site and for the storage of the vast quantities of medical stores required for the U. S. Public Health Service hospitals.

The Public Health Service promptly transformed a group of cottages into one hospital and set to build another, the whole now accommodating 430 patients. Not including the somewhat variable hospital quota the reservation now has a population of 839 persons, about equally male and female, with many children and few aged.

The birth rate on the reservation was 39.33 per thousand, as against 24.39 in the whole State and 28.78 in the county. The death rate was only 3.67, the excess in children being probably about balanced by the deficiency in aged persons.



Alabama.—At a recent meeting of the Alabama State Medical Association an appropriation of \$2,500 was made for a memorial to Dr. Jerome Cochran, founder of the Association. It was voted to petition the next session of the Legislature to name the State Laboratory in his honor.

In a special notice to Alabama barbers the State Board of Health calls attention to the fact that there are a number of cases of anthrax in the country, the mortality being about one-third of the case rate. Attention is called to the fact that it is a disease of animals, and generally communicated to man by direct contact with infected animals, their hair or their hides. The disease is of interest to barbers because some cases have probably been due to infected hair of shaving brushes. Manufacturers of shaving brushes are now required to sterilize all the hair and bristles used. This has not been required until quite recently, so that there may be some infected brushes in the market. For this reason all barbers are urged to boil all new and unused brushes for four to five hours continuously before placing them in service. Brushes that are set only in glue will not stand this treatment

and these should be soaked for twenty-four hours in a solution of 10 per cent formalin or bichloride of mercury, one white tablet to a quart of water. Before the process is completed the soaking solution should be heated to a moderate temperature (130 degrees F.) for several hours. Warning is given that brushes not having the name of the manufacturer should be regarded with caution.



California.—On account of the prevalence of diphtheria in the Ross School, Marin County, the Health Officer has caused cultures to be taken of all the children with 22 per cent positives. The authorities believe that these children have become carriers, and have suggested that a carriers' school be formed for them in which they may receive regular instruction from a teacher from whom a positive culture was taken.

A case of tetanus following vaccination in Richmond, Cal., is likely to afford those who oppose vaccination with ammunition. The facts in the case, however, have been investigated by health officials, and it was found that the child lived in filthy surroundings, was very dirty herself and that the dressings over the vaccination had been allowed to become filthy. What is a practical control lies in the fact that eight other children were vaccinated at the same time with the same virus and in all of them the vaccinations ran perfectly normal courses. In addition it should be noted that a period of 26 days elapsed between vaccination and the onset of the disease, so that the virus is eliminated entirely as the cause of the disease.

The authorities of Oakland, Cal., are endeavoring to establish municipal auto camps. They urge that it is important to have such camps so that visiting autoists may find places in which sanitary conditions are maintained. Tourists are now camping in vacant lots in different parts of the city with attendant risk to the public health, and the proposal to establish regular places under supervision is a real health measure.

The legal question has come up in Pomona, Cal., as to whether soda straws are garbage or rubbish. The contractor who takes the garbage refused to remove the straws, asserting that they were rubbish.

The State Board of Health is of the opinion that on account of the food materials clinging to them and their liability to attract flies, they are to be classed as garbage.



Florida.—Governor Hardee has appointed Dr. C. T. Young of Plant City, Mr. Charles H. Mann of Jacksonville, and Dr. F. Clifton Moor of Tallahassee to constitute the State Board of Health. At the meeting of the organization on June 6, Dr. Young was elected President of the Board and Dr. Raymond C. Turck of Jacksonville was appointed State Health Officer in place of Dr. R. N. Greene, resigned. Dr. Turck assumed his duties June 21, 1921. The new health commissioner has been engaged in health work in Florida for the past 20 years, was Division Surgeon, 35th Division and Base Surgeon, Base Section 2, A. E. F., and has been a frequent contributor to medical and military literature.



Louisiana.—In January a letter was sent to parish and municipal health authorities and presidents of legislative bodies in the various parishes, giving information that, coöperatively with the parish itself and the International Health Board, the State Board of Health would make an appropriation of one-fourth of the expense of health unit work in the various parishes. Ten thousand dollars was budgeted, parish, one-half; International Health Board, one-fourth; State Board of Health, one-fourth. The budget items included salary of full time health officer, sanitary inspector, nurse, clerical assistant. The campaign was outlined for control of communicable diseases, eradication of soil pollution, and child welfare work. The circular also stated that demonstrations of malaria control would be conducted on a similar basis, with supervision furnished by the U. S. Public Health Service.

Up to date four parishes, Beauregard, Caddo, De Soto and Natchitoches, have voted the appropriation. The office has been established in Natchitoches, with personnel selected and operations begun.

Dr. P. W. Covington, Director in charge, has visited all four of the parishes and assisted in the campaigns. Dr. Hugo Muench, Jr., is at present Assistant Director, with one parish in his charge. Dr. Henry W. Irwin has been selected to direct the work in Natchitoches Parish.

Maine.—Through an arrangement with the Federal Government Dr. L. D. Bristol, State Health Commissioner, has made it possible to use frankly penalty postal cards for matters of notification. This will relieve the physician of considerable trouble and cost. Under present conditions the physician must fill in a form, provide an envelope and mail the same at his own cost for the stamp. The proposed plan will furnish him with penalty cards, which he will fill in and drop in the nearest mail box. It is expected that this simplification will remove most of the difficulties in securing reporting of diseases, and prove of benefit in the warfare on communicable diseases.

The State Board of Health has undertaken a state-wide survey of sanitary conditions in coöperation with the Maine Public Health Association. In this matter the aid of local health officials is asked in making replies to a questionnaire, and it is expected that light will be shed on sanitary conditions especially in the smaller municipalities and rural sections.



Michigan.—Free and unlimited distribution of antitoxin—the certain cure for diphtheria when administered within 24 hours after onset of sickness, will start January 1, 1922, the Michigan Department of Health in the meantime planning a state-wide educational campaign to reduce the incidence of the disease which caused more than 800 deaths last year.

"Diphtheria has a scourge-hold on the state at present," asserts Dr. Olin, Commissioner of Health, "that can be overcome only by intensive use of preventive measures. Health officers are not, as a whole, releasing cases of diphtheria properly, many carriers going back into everyday life to spread the disease among innocent victims; and mild cases of diphtheria are not being treated, with the result that post-diphtheric paralysis is crippling scores of children.

A Research Advisory Council of Michigan has been formed through the efforts of the Michigan Public Health Association, the purpose of which is to aid laboratory investigation and avoid duplication of effort. Dr. C. C. Young, Director of the Bureau of Laboratories of the State Department, is Chairman of the Council. Other members are: Dr. Herbert E. Emerson, of the University of Michigan Hygienic Laboratory;

Prof. James A. Davis, of the Detroit College of Medicine; Dr. Paul G. Wolley, of the National Pathological Laboratory, Detroit, and Dr. R. W. Pryor, of the Detroit City Laboratory.

Thorough inspection of summer resorts in the northern part of the state is insured this summer, through coöperation of the Food and Drug Division of the Department of Agriculture with the State Department of Health, by the traveling laboratory truck which is engaged in a survey of Mason County. The personnel will include a sanitary engineer, a bacteriologist, and two food and drug inspectors.

Testing of all water and milk supplies, as well as performing diagnostic bacteriology for physicians, will fall to the bacteriologist. Surveys of the sanitary conditions of resorts, inspection of sewage and garbage disposal systems, water supplies, drainage, fly and mosquito control, sanitation of bathing beaches, bath houses, and pollution of streams and lakes, will be carried out by the sanitary engineer. Slaughter houses, meat markets, soft drink and confectionery stands, restaurants, bakeries, stores, creameries, and dairies will be inspected by the food and drug specialists.

The itinerary of the motorized laboratory includes the coast and most of the interior counties from Mason County north around the northern shore of the Lower Peninsula, and as far south along the eastern coast as time will permit.



Illinois.—The Illinois State Medical Society held its annual session at Springfield, Ill., May 17-19, 1921. Problems in public health and the place of preventive medicine were prevailing subjects for discussion. The need of broad education along the lines of public health was dwelt upon by more than one speaker. The spirit of the sessions seemed to indicate that the medical profession in Illinois has come to realize that the field of greatest service for the doctor is that of prevention instead of waiting for what may be termed, emergency calls. On the last day of the session the Division of Child Hygiene and Public Health Nursing of the State Department of Public Health conducted a clinical conference at St. John's Hospital for the benefit of members of the Society. The clinic gave a practical demon-

stration of what the State is doing for crippled children, especially those who are victims of infantile paralysis.

Dr. John W. H. Pollard was recently appointed full-time Medical Health Commissioner of the City of Quincy, assuming his duties on June 15, 1921. He goes to Quincy from Lexington, Va., where he occupied the chair of Hygiene and Physical Education and acted as campus surgeon at Washington and Lee University. The employment of a full-time health officer is in keeping with local plans to establish at Quincy one of the most complete and efficient municipal health departments in the state of Illinois. Provisions in the plans have been made for an adequate personnel in the way of inspectors and nurses and for the installation of a first class city laboratory.

The developments in Quincy were made possible through the creation of a public health district. Under a State law any township, road district or combination of these units may establish a public health district that makes possible a tax levy sufficient to carry on adequate and efficient public health administration. Quincy is the first municipality in the State to take advantage of the provisions of the law.



Missouri.—The State Board of Health has been practically reorganized. Dr. Cortez F. Enloe of Jefferson City, replaces Dr. T. W. Cotton of Van Buren; Dr. E. E. Brunner, Dr. W. J. Ferguson; Dr. Franklin E. Murphy, Dr. W. A. Clark, and Dr. Rudolph S. Vitt takes the place of Dr. George H. Jones. Dr. Enloe has been elected Secretary and is State Commissioner of Health, with his office in the State Capitol.

A Division of Rural Sanitation has been established in the State Board on a coöperative basis, Dr. Thomas Parran, U. S. P. H. Service, being designated Director.

The Kansas City Consumers' League has been undertaking educational work among the citizens through the newspapers. There have been published in the daily papers sections of a continuous story, "The A. B. C. of the Milk Controversy." The story has run on in question and answer form, it has been made evident that the labeling of the milk was not in accordance with the law, that there are certain standards which

should be lived up to, and that three or four grades of milk are necessary under conditions in cities, grades that are suitable for babies, for ordinary family use and for manufacturing purposes. That cleanliness is an important foundation stone is emphasized, and the bearing of the bacterial count is stated. The latter subject is illustrated by means of a number of drawings so that to a considerable extent the method of obtaining the count may be understood. The whole group of articles constitutes a very useful means of getting the people to know what it means to have clean and wholesome milk. When the standard is established in the minds of the people there will be no difficulty about making rules and enforcing them.



New York.—The N. Y. State Department of Health conducted from June 13 till June 25 a two weeks' Institute in New York City, for public health nurses. Altogether 75 hours were devoted to lectures and field work, 18 subjects being considered. A rough scale of relative importance of the different subjects may be made up from the time schedule, child hygiene being assigned 8 lecture hours and 9 in the field, communicable diseases, 7 hours of lecture and 3 in the field, with mental hygiene, dental hygiene, personal hygiene, public health education, housing, diseases of adult life and social aspects of nursing with one lecture each and food and nutrition and public health law, two hours each. It should be borne in mind, however, that the students were all nurses to whom certain phases of the subject had already been presented in their regular school courses.

In the report of the Committee on the Correlation of Nutrition Activities of the New York Nutrition Council three general items are emphasized, the standards first for nutrition work itself and those for the training of students of nutrition both in college courses and in field work.

The nutrition work itself can not be considered all-sufficient unless it includes:

1. Adequate medical service for the careful diagnosis, supervision and treatment of physical causes of malnutrition.
2. Effective educational work reaching both children and adults.
3. Adequate social work for the diagnosis

and treatment of social causes of malnutrition.

Certain types of agencies are especially well qualified to handle these various phases of a well rounded nutrition program, but just how their work may best be correlated will vary considerably in different localities. The Committee therefore recommends that any group attempting to do nutrition work in a particular neighborhood make a careful study of the agencies best qualified to assist locally along these three lines and that a joint program be developed which will reach as effectively as possible as large a proportion of the community as possible.

For New York City the associations which can be valuable in the coöperative work are noted.

With reference to the statistics which must be fundamental in any work of the kind, the Committee makes certain recommendations namely:

1. Better record forms for uniform use in different types of nutrition work.
2. More uniform standards for estimating malnutrition.
3. More accurate information and a uniform classification of the wide range of possible causes of malnutrition.
4. A clear statement of the fundamental principles of treatment.

The recommendations for training are set forth in studies with approximately the hours to be devoted to each subject, and suggestions are made as to minimum standards for field workers.

An experimental health station has been established by the Health Department of New York City in Public School No. 43, Manhattan. It is intended for a test to determine at what cost the 800,000 school children of the city can be made fit and kept in good health.

The 3,000 pupils of this school are to be given the most efficient health care possible under the direction of Dr. S. Josephine Baker, head of the Bureau of Child Hygiene. In remedying all physical defects found, the Bureau is to be assisted by the New York County Chapter of the Red Cross and the physical education, household economics, nursing and health departments of Columbia University.

More than 1,000 of the pupils in the school have been found to be undernour-

ished by the preliminary examinations. A start has already been made in teaching these children and their mothers how to correct this condition by nutrition workers provided by the Red Cross. Public health and nursing students of Columbia University are assisting with home visiting and instructing parents how to improve the health of their children.

A doctor and nurse have been installed in the school to examine each child and advise the parents regarding physical defects such as diseased tonsils and adenoids, poor vision and hearing. Ordinarily there is only one doctor to each six schools and a nurse to each three schools. A dentist has been provided by the Red Cross to give treatment to children most in need of it. To determine susceptibility to diphtheria, the Schnick test has been given to the entire school. Those who have been found to be in danger of developing the disease are to be given toxin injections on consent of their parents.



North Carolina.—The Land Owners Association of this state, with headquarters in Wilmington, has taken up for the second season an aggressive warfare on the *Anopheles* mosquito, the malaria carrier. The contest of last year was a competitive one with prizes for the best essays and more than 70,000 school children were interested in 32 eastern counties. A number of prizes were distributed in each of the counties. The work of the present year is along the same lines, and is now under way, some of the counties having already submitted the essays of their school children for judgment.

Medical inspection of the school children in North Carolina has led to the establishment of many clinics and the call for more. A report of the State Health Department notes that two additional nurses have been put into the field for work among school children and that the work of remedying oral defects has already reached about 2,500 of these pupils. These cases have been largely the removal of diseased tonsils and adenoids.

In its anti-typhoid work the State Board notes that in reports for May from 57 counties are 128 cases. This number is only about two to a county, but the existence of

these is a potential danger through the infection that they may originate. The State is undertaking a good deal in the way of prevention through popular education.

The venereal disease campaign conducted by Millard Knowlton, M. D., Regional Consultant, U. S. P. H. Service and Director of the State Bureau, continues its activity. Dr. Knowlton is engaged in a systematic effort to educate the physicians of the state through outlines of cases, printed reports from the Massachusetts General Hospital and the like. Every physician in the state has an opportunity to inform himself and to do his part in the warfare on this group of maladies.



Ontario.—The most important recent development in the public health administration of Toronto is the transfer of the functions of the Social Service Commission to the Medical Officer of Health. This step, which was taken by the City Council on May 30, will virtually make the Department one of Health and Public Welfare.

In the city control of the milk supply the Department of Health has purchased recording thermometers to be installed in all pasteurizing plants in Toronto to help in the enforcement of the compulsory pasteurization law.

The Toronto School Service has established its first "Sight-saving Class" under the supervision of a specialist furnished by the Department of Health.



Texas.—In urging the need of proper education of nurses for public health work, Miss Esther G. Pinder, Director of Public Health Nursing, Southwestern Division, American Red Cross, in conference with Dr. Carrick, State Health Officer of Texas, stated that there has been a remarkable development in the profession in the state. In two years 67 county nurses have been put into the field, but the demand is now greater than the supply. It is true that there are about 800 Red Cross nurses in the state, but these are not eligible for the state work on account of lack of educational requirements. Graduation from a four to eight months' special course is necessary to be eligible for appointment to a position as state public health nurse. The University of Texas offers a satisfactory course, and

if the general nurses in the state would take advantage of what is before them they could readily supply a great state need.

The need for a physical examination every year is urged upon the citizens of the state by the Texas Public Health Association. From the fact that 150,000 persons die each year in the country from tuberculosis, there is a strong argument for physical examination, since many of these could have been saved if taken in time. The examination offers the opportunity to discover other difficulties which may lead to injury or disablement either by accident or through disease, and among these may be noted, defective vision or hearing, flat foot, latent constipation, heart disease, high or low blood pressure, anemia, mental trouble and infected teeth or tonsils. "Only custom and tradition," according to a bulletin of the Association, "stand in the way of making a thorough periodic overhauling of the body."

The Texas Public Health Association promulgates the following rules which will be helpful in building up resistance against tuberculosis, and in fact against any other of a long list of diseases.

1. Keep the body healthy and strong all the time by living, working, sleeping and playing in the open air as much as possible.

2. Eat and drink only that kind of food that will build and make the body strong.

3. Work hard, but do not over-work.

4. Have yourself examined by a good doctor from top to toe at least once a year, whether you feel sick or not. The safest health insurance is a periodical physical examination.

5. Protect your health and the health of your fellows and community by avoiding careless spitting, sneezing and coughing. These things spread more disease than anything else.



Utah.—The Industrial Commission of Utah from a study of the accidents (especially the fatalities) occurring in connection with mining in the State was struck by the large number arising from lack of due care on the part of the employee injured or carelessness on the part of some fellow employee. Figures show that approximately 40 per cent of the deaths are due to carelessness,

as against only 10 per cent or 12 per cent that can be laid to faulty conditions in the mines. With a view to reducing the number of these accidents an intensive campaign of education was inaugurated, conducted jointly by the Industrial Commission of Utah and the United States Bureau of Mines.

Through the coöperation of the U. S. Bureau of Mines, Mine Rescue Car No. 11, operating in Utah, has been utilized as the means of carrying on the campaign. In making the regular training visits to the mining camps of Utah the crew of the car was authorized to include with the courses of instruction in Mine Rescue and First Aid, safety and health rallies, foremen's safety meetings, and appeals carried on through the public schools to stimulate an awaking of personal responsibility of miners and their families in safety and health endeavor.

After careful consideration it was agreed that better results could be obtained both for the campaign, as well as the Bureau of Mines, training, if at least two weeks were spent at each large camp. The first week to be devoted to campaign purposes and the second week to the usual training. Experience so far has shown that the safety and health work of the first week has given a decided impetus to training work and greatly aided in securing good attendance at the training classes.

The publicity for the campaign and training is carried on by the following means:

Advance notice to the operators in the district to be visited.

Notices in the local papers giving the period of the campaign, dates and places of safety rallies and training classes.

Screen notices in moving picture theatres.

Notices to lodges and various associations.

Card posters, 9 by 12 inches in size. These posters are placed in the show windows of stores and posted on all bulletin boards at post offices, city halls and mine offices.

Hanging cards six inches square that can be placed by means of attached cord to any convenient nail or projection and hung in windows of homes and offices.

Notices to schools and distribution of pledge cards of the Safety and Health Scout League.

INDUSTRIAL HYGIENE AND OCCUPATIONAL DISEASE

Abstracted by Drs. E. R. HAYHURST and E. B. STARR.

Value of Medical Service in Industry.—

The value of medical service in industry was emphasized when state compensation laws became effective, which made it necessary to provide medical and surgical treatment for workers injured. It demonstrated that early attention to trivial accidents and injuries reduces the amount of time lost both by the employer and the employee. Further experience showed that the best working conditions notably reduced absenteeism among employees. It also showed that conditions inimical to the health of the workers could be removed. The importance of the foregoing is about to become amplified through the adoption of laws providing compensation for industrial diseases. The states of Massachusetts, California, New York, Wisconsin, Connecticut and Ohio have already adopted such legislation. Men should be placed at work for which they are physically qualified. The only method possible is through the physical examination of workers. A study of processes and job requirements brings to light the degree of hazard present in different operations and suggests protective measures to meet each situation. Rejections for work should be based upon the following:

Those candidates who in the judgment of the physician are a menace to themselves, to their fellow employee, to company property or the public, and should be based upon the following schedule of defects:

1. Hernia, unless operated on or the company is legally released from responsibility.
2. Loss of or defective vision.
3. Deafness, or disease of the ears likely to lead thereto.
4. Organic disease, including uncompensated heart disease, disease of the circulatory system, stomach, liver, kidneys, etc.
5. Communicable disease, including the acute infectious diseases, as well as tuberculosis.
6. Disease of the nervous system.
7. Defective mentality.
8. Amputations.

Candidates should be classified in the following order:

1. Individuals physically and mentally fit for any job.

2. Individuals physically fit for any employment, but below par in development or by reason of minor defect, who by treatment may be placed in Class 1.

3. Individuals fit for limited employment when certified to by the plant physician.

4. Individuals unfit for any employment.

It is not our purpose to eliminate the defective, unless dangerous to the organization, but to lead him to remedy his defects for mutual good.—C. E. Ford, *General Chemical Bulletin*, May, 1921, pp. 278-279.

✦

Consumption Among Metal Miners.—The authors, a mining engineer and a public health physician, made a study of miners' consumption in the Butte, Montana, mines which extended over a period of four years. More than 1,000 miners were physically examined and approximately 42% showed definite signs of dust injury to the lungs. It was found that the death rate in Butte in one year from tuberculosis was nearly 13 times as great as that of the state of Michigan.

Miners' consumption is mechanically produced, is neither contagious nor infectious, develops slowly, and by the production of scar tissue which gradually impairs the function of the lungs. The vast majority of miners with considerable dust damage to the lungs contract tuberculosis and ultimately die of it, particularly if exposure to the dust continues. The menace to the health of the community in general from the spread of tuberculosis in the miners' families becomes more evident from year to year. Extensive betterments have been started by several mining companies in the nature of ventilating equipment, water drills, sprinkling apparatus, etc.—Harrington & Lanza, *Technical Paper 260*, U. S. Bureau of Mines, 1921.

✦

Eye Injuries and the Workmen's Compensation Law.—In Ohio the law gives no compensation on a permanent disability of less than 25% loss of vision in one eye, allowance being made for only temporary disability. The loss of one eye lessens the reserve against the possibilities of the future by one-half. Now the loss of one eye, only, is ordinarily valued at from $\frac{1}{8}$ to $\frac{1}{2}$ the economic value of both.

It has impressed the writer that an eye whose vision was reduced to $\frac{20}{100}$ by fundus trouble, was not nearly so useful an organ of vision as one whose vision of $\frac{20}{100}$ may have been brought about by corneal opacities. In the latter case it has seemed that vision at short range was relatively better. The average compensation in 135 cases of eye injury was \$563.71, and the average medical services \$70.40. This does not include any part of the overhead in the administration of the law.

CHART FOR EVALUATING VISUAL LOSS IN ONE EYE

20/20	= 100% vision or no loss
20/30	= 95% vision or 5% loss
20/40	= 90% vision or 10% loss
20/50	= 85% vision or 15% loss
20/60	= 80% vision or 20% loss
20/70	= 75% vision or 25% loss
20/80	= 70% vision or 30% loss
20/100	= 60% vision or 40% loss
20/150	= 35% vision or 65% loss
20/200	= 10% vision or 90% loss

Appended table was adopted by the Chicago Ophthalmological Society in November, 1919.—John E. Brown, *Ohio State Medical Journal*, December, 1920, pp. 909-914.



Cost of Health Service in Industry—Previous studies of this subject made by Alexander in 1915 and 1916 showed that the average cost of effective industrial health services per person per year was \$1.88 and \$2.21 respectively. Drinker and Drinker in 1920, estimated that \$5.00 per employe was more nearly conservative. Wade Wright in the Cleveland Survey, 1920, found that the average cost was about \$5.00 per year although as much as \$11.23 was recorded and was probably not excessive at the present time for high order of service rendered. The present study was undertaken on a broad basis and is practically all from plants with organized medical departments. The information was gathered by means of questionnaires. Of the 207 complete returns, 104 were based on 1919, 99 on 1920, and 4 on records for 1918. A total of 764,825 workers were employed of whom about four-fifths were males. These plants were located in 24 states, particularly eastern and middle western. The earliest recorded effort was made in 1879. About 87% have established these services since 1910. The average cost, as shown by this investigation, ranges from \$1.84 per employe per year in the tobacco industry to \$24.40 in the mining industry, averaging, for all the industries reporting \$4.43 per employe per year.

When the various activities are considered it becomes plain that a large amount of constructive service is given out at a moderate cost. Averages for some of the industries are as follows:

Industry	Cost per Person
Automobile	\$ 5.50
Boot and Shoe.....	7.75
Clothing	4.70
Food and Food Products.....	4.18
Iron and Steel.....	4.10
Metal Manufacturing	3.75
Mining	24.40
Rubber Manufacturing	5.41
Smelting and Refining.....	8.41
Tobacco Manufacturers	1.84

The report takes up also the character of staff organization, the equipment of hospitals, dispensaries, and first-aid outfits, and the general scope of industrial medical departments. The appendix consists of tables showing the personnel, services rendered, and the cost of such services for various sized plants.—*National Industrial Conference Board, Research Report, No. 37, May, 1921.*



Lowest Safe Limits of Carbon Monoxide.

—Haldane points out that the poisonous action of illuminating gas is entirely due to the carbon monoxide it contains. The lowest proportion which would in time produce nausea and headache and other symptoms was about 0.2%, but in the course of some experiments he had found himself able to endure up to 0.6% without symptoms, as a result of getting acclimatized. The risk of poison from pure coal gas was negligible, but when carburetted water gas, containing about 4 times as much carbon monoxide as coal gas, was supplied, the risk sterilization, and (3) the workers must be encouraged in personal cleanliness and hygiene. The methods for following out each of these three necessities are outlined. Among the personal hygiene features are considered: ablutions, the common rinsing bucket, the washing away of particles first in warm water before wiping the oil off because of danger of scratching the skin, the prevention of chapping of the skin, clean clothing, gloves and armlets, clean machines, spitting in the oils, instruction of the workers in hygiene, communicability, prompt attention to cuts, necessity of frequent redressings, and the relief of mild infections.—*Safe Practices, No. 44, National Safety Council, June, 1921.*

Danger of Athletics for Girls and Women.

—The writer, who is a woman, states that she once held that sex was more or less incidental and that a well-trained woman could do anything a man could, unless, perhaps, it was a case of exerting sheer physical force. She used to encourage girls to take up the work of a drill and games mistress, it appearing almost an ideal occupation. She has noted, however, that the effects upon these girls and women later were disappointing. They seemed to deteriorate. They seemed more selfish, more concerned upon material things and material advantages. The girl of 15 appeared less a budding woman than an enlarged and accentuated copy of herself at 10 years old. She had not risen in the scale of being. The effects on the grown woman were more disappointing. Many whom she knew had become physical experts, but most of them had had more or less serious breakdowns at some time. Young women became possessed of hard muscles, set jaw, flat chest, and often a hard aggressive manner and an ungainly carriage. The attempt to make a boy of the girl led to the cult of the "boyish" figure with undeveloped breasts. These athletic women suffer from nerves (manifested in irritable tempers), from heart trouble, from some form of rheumatism, or from displacement of organs. Sometimes the monthly disability stops for long periods. Their marriages are often childless, and their children physical inferiors, comparing badly with the stalwart sons many a slight feminine woman produced in Victorian days. The writer has many times heard the expression "One would think an athletic girl such as she would be up and out almost at once, like a savage woman," instead of having particularly difficult confinements. Their mentality is not healthy. They tend to decry marriage and affect to despise the opposite sex (while imitating them) and yet are inordinately occupied with the discussion of sexual matters. Some of these women also have a curious influence on girls, neurotic girls seeming obsessed by them. Most of them seem to have stifled what is finest in woman—love, sympathy, tact, and intuitive understanding. "Unwillingly I have been convinced by the logic of experience. Strenuous games I believe bad for the woman and worse for the girl, and the sooner it is realized that the differences between the sexes are profound and vital and that these differ-

ences are accentuated and not lessened by evolution, the better for humanity." The young girl should have placed before her the ideal of true womanhood and that hers is the gift of "mothering;" it is this that makes her of value in the world.—D. Cowdroy, *Lancet*, May 14, 1921, p. 1050.



Sickness Among Steel Workers.—Statistics of sickness lasting for one week or more among the members of the sick-benefit association of a large Pennsylvania steel company for the two years ending July last, as compiled by D. K. Brundage for the U. S. Public Health Service, show somewhat surprising results. Respiratory diseases, such as influenza, grippe, and pneumonia account for 50% of all cases; and bronchitis, pleurisy, and tuberculosis add 11% more. Rupture and infection together account for 4%, not including occupational infected wounds. General debility, which applies to men no longer able to work in the mills, accounts for 1.5%; the average age of these men 68 and their employment had lasted an average of 40 years. In duration for which sick-benefits were paid, the diseases (excluding general debility) ranked as follows: rheumatism, appendicitis, tuberculosis, typhoid fever, intestinal diseases, nervous prostration, kidney disease, heart disease, sore eyes, etc.—*Health News*, U. S. Public Health Service, April, 1921.



Prevention of Skin Troubles from Cutting Oils and Emulsions.

—This illustrated pamphlet of 8 pages, including the diagrams of correct filtering and sterilizing apparatus, has been very carefully planned by a special Committee of the National Safety Council, and is submitted in practically a codified form. It includes the industrial use of cutting oils and emulsions, the typical skin troubles and their causes, how these troubles start, the nature of the irritants in oils, metallic injury to the skin, and the source of the germs. The methods of prevention emphasize: (1) that the cutting medium must have a mineral oil free from irritants, (2) must be kept clean by filtration and went up sixty-fold. The lowest portion of CO in the air which would endanger life in about 12 hours was, according to the susceptibility of the person, from 0.15 to 0.3%. Dr. Haldane's suggestion was that a definite maximum of 20% of CO in illuminating gas for domestic purposes should be established.—Dr. J. S. Haldane, *British Medical Journal*, Feb. 26, 1921.

PUBLIC HEALTH LABORATORY NOTES

Abstracted by ARTHUR LEDERER, M. D.

Bacteriology of Common Colds.—On clinical grounds, the view was advanced that the common cold is an infectious disease analogous to influenza, featured by the frequent development of complications in the upper air passages such as sinus infections, tracheitis and otitis. A review of the literature by the author showed no convincing evidence that any known organism is the primary cause of the cold. The cultural studies fail to show in uncomplicated cases any variation in the flora which would enable one to select any organisms as the cause of colds. On the other hand, where clinical complications occurred pathogenic organisms were definitely associated with them. The author feels, therefore, that the primary cause of colds is probably an organism as yet unknown and certainly not one of the usual pathogens such as streptococcus, pneumococcus, *B. influenza* or staphylococcus. But the primary cold, whatever its final cause, alters the mucous membrane in such a way as to allow secondary bacterial invasion and consequent frequent development of local complications. The cultures clearly indicate that such complications are due to a variety of bacteria such as pneumococcus, streptococcus and staphylococcus.—A. Bloomfield, *Johns Hopkins Hospital Bulletin*, 32, 120 (1921); *Jour. A. M. A.*, 76, 1532 (1921).

Xanthochromia of the Spinal Fluid.—Xanthochromia of the spinal fluid is caused by the decomposition of hemoglobin, whereby bilirubin is formed, through a ferment produced by the action of the red corpuscles on the cells of the membranes of the spinal cord. Demonstration of bilirubin in the spinal fluid is best accomplished by diazo reaction. Xanthochromia has been reported in 310 cases in the literature as associated with pressure on the cord, hemorrhagic inflammations and hemorrhage in the central nervous system and its membranes, in which examination of the spinal fluid frequently furnished differential diagnostic evidence. Xanthochromia always occurs when red blood corpuscles find their way into the spinal fluid. Bilirubin is formed, as in other hemorrhagic exudates, within a few

days. The Froin syndrome; xanthochromia and coagulation (spontaneously or after addition of fresh serum) is found in only about a fifth of the cases of xanthochromia, and associated with processes narrowing the spinal canal.—E. Leschke, *Deutsche med. Wochenschrift*, 47, 376 (1921); *Jour. A. M. A.*, 76, 1541 (1921).

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Iodin in the Cerebrospinal Fluid.—Iodin is present in the cerebrospinal fluid of normal individuals. Iodin, in increased amounts, is present in the cerebrospinal fluid following the administration of iodids by mouth, by rectum and intravenously. The iodine content of the cerebrospinal fluid following administration of iodid by mouth or by rectum is small compared with that following the administration intravenously. The iodine content of the cerebrospinal fluid following the administration of iodid intravenously plots a definite curve, depending on the amount administered. Certain observations made in the course of this study suggest the possibility that (a) neurosyphilitic tissue takes up more iodine than normal nervous tissue, and (b) the presence of a meningitis increases the permeability of the meninges to iodine compounds in the blood.—Earle D. Osborne, *Jour. A. M. A.*, 76, 1384 (1921).

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Diagnosis of Chronic Genital Gonorrhea in the Female.—Cutaneous tests made with the glycerinated extract and the protein extracted from the gonococcus are useless in detecting the presence of a gonorrheal inflammation of the urethra, cervix and adnexa. A local gonococcal infection limited to the genital tract of females does not produce sufficient immune or toxic substances in the blood, or for a sufficient length of time to make the complement fixation test of diagnostic value. The laboratory methods which we have at present to aid us in the diagnosis of chronic genital infections are extremely unreliable and inadequate, and the best guide is a reliable history of the case, together with the clinical findings.—Thomas H. Cherry and Salvatore Di Palma, *Jour. A. M. A.*, 76, 1572 (1921).

Auto-urine Tests for Active Tuberculosis.

—In May, 1919, Wildbolz of the Island Hospital, Berne, Switzerland, described a test for active tuberculosis in any stage. While the principle of this test was not new, its efficiency, as reported by him and his coworkers in several later articles, has been so definitely shown as to attract considerable interest in Europe. The tuberculin used for the skin reaction is furnished by the patient himself in his own urine. If this reaction is positive, the assumption is that tuberculosis antigens are in the urine, and that therefore an active tuberculous process exists in the body. If the urine contains no antigens, its injection affects the skin nonspecifically and exclusively, as would an injection of a solution of various urinary salts which, if not too highly concentrated, will not cause a reaction of itself. One hundred and fifty cc. of morning urine are evaporated to a tenth of the volume or 15 cc. in vacuo. When the urine is concentrated to one-tenth of its volume, the flask is clamped off and air allowed to enter gradually. The concentrated fluid is then placed in a sterile container and allowed to stand 24 hours, at the end of which time the greater portion of the irritating urinary salts is precipitated. These are removed by passing the urine through a sterile filter paper. A minute quantity, about 0.1 cc., is then injected intracutaneously on the anterior portion of the forearm, according to the method of Mantoux with tuberculin and of Schick with diphtheria toxin. A very fine needle was used, making easy the formation of a small bleb with the fluid. This bleb persists for a short time, as does a slight burning sensation. In no case did the authors observe any systemic effects whatsoever, the entire reaction being manifested by a local infiltration of the tissues at the point of injection which developed within from eighteen to forty-eight hours after introduction of the fluid. The size of the infiltration varied from about 4 to 10 mm., 5 mm. being about the average. In every case a control urine was injected at the same time, in the same quantity and in the same manner. This control urine was made from urine of an allergic nontuberculous individual who did not react to his own urine. The control urine injection was of great value in estimating the amount of infiltration about the site of the auto-urine injection. To determine definitely whether or not the patient was allergic or hypersusceptible to tuberculin, a Mantoux test was also made simultaneously with

the two urine injections. The von Pirquet test was used in the first few cases, but was discarded in favor of the Mantoux, since it was believed that the latter was more reliable. In most of the cases in which a positive reaction was obtained, the infiltration persisted for about 72 hours. In none of the cases were there conflicting results. In every case in which there was definite allergy to tuberculin along with signs of activity, the auto-urine reaction was positive. And all of the anergic patients with positive signs gave definite reactions when their urine was injected into allergic individuals except in the one case mentioned above in which the renal impairment induced the authors to use the auto-serum test, the result of which was positive. Further, the negative reactions obtained in the allergic cases have only borne out the opinion that these individuals had no active tuberculosis and were accepted as favorable rather than as disparaging results.—Cole B. Gibson and William E. Carroll, *Jour. A. M. A.*, 76, 1381 (1921).

†

Etiological Significance of *B. Proteus Vulgaris* in Cholera Infantum.—The author as the result of his experiments, comes to the following conclusions: (1) Small laboratory animals, such as rabbits, guinea-pigs, and puppies, which have been given large or small doses of *B. proteus* cultures by the alimentary canal do not show symptoms resembling cholera infantum. The experiment was also negative when an attempt was made to favor the pathogenic action of the organism by causing an abnormal condition of the alimentary canal by alkaline substances or purgatives. (2) The death of small animals which had been made to ingest large doses of *B. proteus* cultures, accompanied by alkaline substances or purgatives, could be attributed to the toxic action of the organisms (endotoxins). Sucking rabbits showed less resistance to the action of *B. proteus*, and it was possible to kill them even with small doses of the culture given by mouth without first causing any artificial changes in the gastro-intestinal functions. These experiments show that *B. proteus*, though not constituting the etiological agent of cholera infantum, may have some importance in the pathogenesis of this disease when conditions are present to favor its development.—Pupilli, *Ann. d'Igiene*, December 1920; *Brit. Med. Jour.*, No. 3147, p. 68 (1921).

Comparative Values of Complement-Fixation Methods in Syphilis.—Cholesteriolized antigen properly prepared and titrated yields from 10 to 15% more positive Wassermann reactions on luetic sera than does the plain antigen. The authors consider it a perfectly safe antigen to employ the Wassermann reaction with complement fixation in the ice box at 2° C. for a period not longer than ten hours observing the precautions outlined in this paper. They have obtained but one positive reaction employing such methods in which the clinical findings, the history, or both, did not justify a diagnosis of lues. This patient is still under observation and there is a great possibility which may be later established that this patient has had lues.

The Hecht-Gradwohl test when positive in the temperate zone is diagnostic of lues. It will yield 15% more positive reactions on luetic sera than does the classical Wassermann reaction. It may be employed in from 95 to 98% of fresh sera (not over 48 hours old). It does not yield false positive results in tuberculosis.

The Wassermann test employing complement fixation in the ice box at 2° C. will yield a much higher percentage of positive reactions than does the Hecht-Gradwohl test employing complement fixation in the water-bath. With complement fixation under the same conditions, however, the tests practically agree.

The three serologic reactions appear in the serum and disappear under treatment in the following order:

The ice box Wassermann reaction is the first to appear positive, the Hecht-Gradwohl test follows, the water-bath Wassermann reaction appearing last. Under treatment the water-bath Wassermann reaction disappears first, the Hecht-Gradwohl reaction next, the ice box Wassermann reaction last.—H. D. McIntyre, E. A. North, and A. P. McIntyre, *Jour. of Lab. and Clin. Med.*, Feb., 1921, 233 (D. G.).



Creatinin Coefficient in Pulmonary Tuberculosis.—On the basis of the data secured in this study, it seems that, in apparently clinically uncomplicated cases of pulmonary tuberculosis, the creatinin coefficient is slightly below the average normal figure, and that it reaches its greatest height in middle grade cases, i. e., those in which increased catabol-

ism, due to disease activity, has not yet been offset by excessive tissue waste and generally lowered vitality.—Theophile Raphael and Nina Eldridge, *Arch. Int. Med.*, 27, 604 (1921).



Blood Urea Nitrogen in Acute Intestinal Obstruction.—Seven cases of acute intestinal obstruction are described, in all of which there was an increase in blood urea nitrogen. The lowest reading was 54 mg. per 100 cc. The highest reading was 170 mg. In one case in which the blood urea nitrogen was 130 mg. per 100 cc., the phenolsulphonephthalein excretion was studied and found to be 58% in two hours and ten minutes. In one case a generalized urticarial eruption appeared while the patient was convalescing from an acute ileus. As the substance which causes the toxemia of acute intestinal obstruction is presumably of proteose nature, it was felt that this eruption was probably a cutaneous manifestation of proteose intoxication. All cases were free from any evidence of chronic renal disease, and it is, therefore, fair to assume that the elevation in the blood urea nitrogen was the result of the acute intestinal obstruction.—Henry W. Louria, *Arch. Int. Med.*, 27, 620 (1921).



Specificity of Chlosterinized Antigens in the Serologic Diagnosis of Syphilis.—All Wassermann reactions should include at least three antigens of varying delicacy: preferably a cholesterinized extract of human heart, an extract of acetone-insoluble lipoids, and an alcoholic extract of syphilitic fetal liver. Wassermann reports should give the antigens used, the reaction to each, and the interpretation of the reaction as a whole, with, perhaps, the dose of serum tested and the method of fixation. Reactions with cholesterinized antigens of ++++ or +++ degree are indicative of the presence of syphilitic "reagin" in the blood. Reactions with cholesterinized antigens below the grade of +++ should be looked on as suspicious and as indicating the necessity for further investigations and should not be looked on as invariably false or proteotropic fixations. Syphilitic patients under treatment should remain under observation until complement-fixation tests are repeatedly negative to cholesterinized extracts, not only with the blood serum but, if possible, with the spinal fluid.—Robert A. Kilduffe, *Arch. Derm. Syph.*, 3, 598 (1921).

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MEASLES AND ITS ALLIES

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War camp statistics are surprising in the evidence they afford that the camps were nurseries of carrier-borne infections and their complications. This author emphasizes the need of attention to the carrier, who is a very important health risk. Prevention here demands sanitary attention in inter-epidemic times as well as during the run of epidemics.

IN a previous article¹ attention was called to the following findings in our investigations of epidemic measles: That the so-called "virulence of measles" depends on the healthy carrier rate. The laboratory examinations showed that the healthy pneumonia carrier rate increases with exposure to mass grouping. In the army only two percent of the deaths attributed to measles were uncomplicated; all others were due almost wholly to pneumonia or its related complications; so then, it is not the measles case rate, but the case fatality rate—that is, the complication rate minus the recoveries—which determines the mortality attributed to this disease. Since the measles case fatality rate is an index of the pneumonia (hemolytic streptococcus) carrier rate, this case fatality rate is essential in an epidemiologic study of measles.

Passing from this establishment of a relationship is mass grouping between the increased pneumonia carrier rate and the virulence of a measles epidemic, this paper will show that measles complications increase with the length of exposure and the size of the group.

SIZE OF THE GROUP

On several occasions Napoleon's armies were decimated by typhus fever, especially during the return from Moscow. The greatest scourge of McClellan's forces was malaria. In both armies there was mass grouping, wherein were scattered cases of healthy carriers; there was a lack of sanitary protection against the insect carriers of these diseases, and a high degree of mass susceptibility. Owing to such favorable conditions, there was a facility of transmission which culminated in a high disease incidence and high mortality. Here the fa-

¹Cumming: Measles Virulence; Explanation of Variation, *Military Surgeon*, June, 1921.

cility of transmission, resulting from mass grouping and from the prevalence of the insect carrier, was of prime importance in determining the disease incidence. Today the mass grouping is disregarded, since it has been recognized that the breaking of a single link—the insect-carrier link—in the chain of conditions reduces the mortality to almost zero. This was the situation when our troops entered the World's War. In that war the insignificant mortality from the insect-borne infections was due to an understanding of the control of the insect carriers of these diseases. In contrast to this the saliva-borne infections, especially the pneumonias, reaped a toll in lives perhaps never equaled in any war, and this is because we have not blocked the major avenue of transmission. Have we not an epidemiologic complex in the saliva-borne infections similar to that which is now obvious in the evolution of the insect-borne diseases?

"During the nineteenth century it was generally believed that great hardships, cold, lack of the necessities of life, and the consequent consumption of spoiled foodstuffs, gave rise to typhus and other fevers²."

In the control of typhus we now recognize and concentrate on the single avenue of transmission; whereas in our combat with the saliva-borne infections, are not our energies diffused? Parallel with the nineteenth century theorists, who termed typhus "hunger fever," and attribute it to lack of food, we, today, cling to theories dealing with lack of food, inadequate clothing, overwork, exposure, which, we say, lower resistance on part of individual and community. On this basis, during the recent war, were offered explanations for the increased prevalence, in the army over the civil population, of epidemic diseases. The same theories were advanced to account for the recent pandemic of influenza-pneumonia. But we no longer take these

items into consideration in fighting the insect-borne infections, even in mass groupings; moreover, in the saliva-borne infections, also, are they not of minor importance in the prevention of mortality and invalidity? It would seem that we might profit in our prevention of the saliva-borne diseases by applying that established principle of prevention which now successfully controls the insect-borne infections; the principle of blocking the major avenue of transmission; in saliva-borne diseases the avenues of indirect contact.

Prevention of transmission is fundamental in disease control, and theories having to do with individual susceptibility are but markings of time through which no gain is made.

During the recent war there was a high mortality from the saliva-borne infections. Here was the mass grouping, the scattered healthy carriers, and lack of sanitary protection resulting in a facility of transmission from the carrier to the susceptible individual. In this case the extent and facility of transmission depended on two factors: the size of the group and the sanitary protection. The larger the group the greater was the contact between the carrier and the non-carrier; in addition, disease transmission resulting from this contact was in direct ratio to the degree of sanitary protection and the duration of exposure.

EPIDEMIOLOGIC MECHANISM OF THE CARRIER STATE LEADING TO MORTALITY.

Among our troops during 1918, 98% of the total deaths attributed to measles were due to complications. These were due chiefly to the pneumonia-producing group of organisms, and among them the hemolytic streptococcus played the stellar role. We are not then interested in the prevention of measles mortality *per se*, but rather in the prevention of mortality resulting from measles complications. Our chief aim, then, must be blocking the avenues of transmission of

²Prinzling. Epidemics resulting from wars.

the potentially dangerous group of pneumonia-producing organisms.

Prior to 1916 the hemolytic streptococcus carrier rate in civil communities was approximately 5%. This gives five carrier to each hundred civilians, or an average of one carrier in each five families. Since families are more or less isolated, cross infections from one family to another are not as common as among troops. So this carrier infection is largely a family infection, just as is tuberculosis. But this isolated small group infection applies only to the civil population. On the other hand, in the army we had large groups, company messes of 250 men. These came from many family groups; as a result in each company of recruits there were approximately 13 hemolytic streptococcus carriers, the civilian rate of 5%. Here, however, we no longer have the small family group, living under the average civilian sanitary protection; rather we have an unwieldy mass grouping, in which the sanitary protection is inferior to that hitherto afforded in the more secluded family group. While in some European countries where the standard of living is very low, there may be a raised sanitary protection to the civilian entering the army, the American plan of living is sufficiently high so that a lowered sanitary protection follows mass grouping and mass exposure. This lowered sanitary protection is indicated by an increased incidence and an increased mortality from the epidemic diseases, and also by an increase in the case fatality rate proportionate to the length of service. At the start there were but few carriers; despite this fact, mass grouping and the facility of transmission soon resulted in an increased carrier rate and the appearance of virus diseases in epidemic form with a gradually increasing pneumonia complication rate.

In order to trace the several steps leading to death following measles infection, let us assume that one has acquired, at the age of 15, a tonsillar infection of

streptococcus hemolyticus. This individual is fortunate in passing through adolescence without acquiring measles infection; moreover, as an adult civilian the chances are he will escape measles, owing to the low prevalence of this disease among civilian adults. In this civilian group there is sufficient sanitary protection to prevent the prevalence of measles, but at the age of 25 years he is among a million soldiers mobilized for war. Although the carrier state is significant at all times, it is now that the tonsillar carrier of the potentially dangerous group of pneumonia-producing organisms, including the hemolytic streptococcus, becomes a menace to the success of the army and of industries. During times of war, in the army, as in civil life, there is a let down in sanitary protection; there is the exposure of mass grouping, and a resultant increase in the epidemic diseases—an example of this is the 1918 influenza-pneumonia epidemic.

Detention camps, while mitigating the danger in mass grouping as far as certain diseases, such as typhus or the acute virus infections are concerned, are ineffective against the hemolytic streptococcus carrier. This condition is not temporary; the task of individual bacteriologic examination would be overwhelming for inspection is not sufficient to identify the hemolytic streptococcus carrier. The elimination of this carrier state would then necessitate the removal of the tonsils of 5% of the entrants, or the segregation of these in organizations more or less isolated. Inasmuch as some of the carriers would be missed, even with bacteriologic examination, the necessity of breaking the chain in all groups would not be eliminated. It appears, therefore, that the non-accumulation of carriers would depend upon continuous sanitary protection.

If we again take up the steps leading to death from measles, and follow the soldier who at the age of 15 became a tonsillar carrier of hemolytic strepto-

coccus, we find that, owing to inadequate sanitary protection in the camps there resulted a prevalence of measles, and he became infected with this disease. Measles uncomplicated is unable to inflict death, but the hemolytic streptococci in the tonsil have stalked this individual for 10 years, awaiting an opportunity when his resistance might be lowered. The attack of measles provided this lowered resistance and the streptococci—displaying intelligence, as it were, much as the jackal “senses” his injured prey—take advantage of this condition, and extend their activities from the tonsil to the lung tissue, resulting in pneumonia; from lungs to pleural cavity, resulting in empyemia; thence to the blood stream, resulting in septicemia. The termination is death caused by this stalking organism.

In addition, this streptococcus carrier, prior to his illness, furnished a source of infection for those about him, and in every group of 100 we started with five such carriers. There was the mass grouping and the facility of transmission; consequently as time went on, there were newly infected individuals, thus augmenting the number of sources for those not yet infected. The result was an accumulative transmission rate which paralleled the accumulative carrier or source rate. Thus there was constant establishment of new foci, so that from five carriers to every 100, the ratio reached as high, in some groups, as 35 to 100. The carrier state is not only a source of danger to the carrier, but to others as well. The carrier will cease to be a danger to others only when the avenue of transmission is successfully blocked; when this is done the carrier rate will decrease.

MEASLES COMPLICATION RATE AS INFLUENCED BY THE LENGTH OF SERVICE

In the following discussion of statistical records of camps in the United States, it is shown that the measles complication rate increased with successive

periods of the war, moreover that for the last period—October-December 1918, the complication rate varied in proportion to the percentage of recruits.

OCTOBER-DECEMBER 1917

In 27 large camps for which measles and its complication are here considered it is noted that with a few exceptions, to be considered later, there is a definite and marked increase in the percentage of complications for the succeeding period of the war. For October 1917, when practically all soldiers in the camps in the United States were recruits the percentage of complications varied from zero at Camp Custer, to 13 at Camp Sevier, and for November of that year from 2% at Custer to 14% at Sevier, and for December from 9% at Taylor to 39% at Sevier.³

The extreme percentages for measles complications—not at the same camp, but at different camps—are zero for October to 39% for December. The greatest increase in the carrier or complication rate occurred at Camp Sevier, where the October rate was 13% and the December rate 39%. This camp, composed of Southern troops, started its epidemic with a high complication or carrier rate. There was an early high source rate and a consequent high transmission rate for this period, conditions which, at the culmination of the epidemic in December, resulted in an excessive carrier rate. The records of this camp demonstrate the influence of a high beginning pneumonia carrier source rate. We find that at Doniphan, while the complication rate for October was zero, the combined rate for November and December was only 5% for over 1,000 cases. Evidently at this camp there were only a few sources at the beginning, and therefore few transmissions, resulting in but few complications.

The smallest increase in the complication rate was at Camp Travis where it

³Statistical data here presented were compiled from the 1919 Annual Report of the Surgeon General, U. S. Army.

was 9% for October and 10% for December. In view of the comparatively high complication rate for October, with its high source and transmission rate, one would expect a higher complication rate for December than actually occurred. About half the command at this camp, however, arrived late—during October November—so here we have a comparatively low December complication rate because of the large percentage of recruits, who, as has been stated above, have the civilian carrier rate of 5%. So, notwithstanding the high beginning complication rate, the high source rate, and a possible high transmission rate, there was a comparatively low December complication rate due to the large number of recent arrivals who had not, as yet, acquired a high carrier rate.

For this first three months period here considered, the average complication rate for all camps increased with each succeeding month. The percentage of measles complications for October was 6.1; for November 7.6; and for December 8.3 with an average for the period of 7.8%. The complication rate is an accurate index of the pneumonia healthy carrier rate. Both these rates increase with the seasoning of soldiers. At certain camps, however, there was no marked increase in the complication rate for December, owing to the dilution of the number of seasoned soldiers by recruits. In this connection it is pointed out that for the first quarter of 1918 the complication rate at Camp Travis increased to 24%. Later we note the effect of the arrival of another lot of recruits in the fall of 1918. In October of that year the command consisted of 60% recruits and there was no marked increase in the complication rate for the last quarter, 25%, over that for the first quarter, 24%. In contrast to this rate for the last quarter of 1918 at Travis with its large percentage of recruits, attention is called to the excessive rates for these months at Camp Hancock, 38%, and at

Camp Jackson, 49%, where there were few recruits in the fall.

JANUARY-MARCH, 1918

During this period the lowest rate, 1.5%, was at Camp Dodge, and the highest, 40%, at Camps Bowie and Sevier. The low rate for this quarter at Dodge explained by the arrival of 15,000 recruits on February 15, and the occurrence of the majority of measles cases during March. In other words, the command was composed of about 60% recruits, hence the low complication rate, 15%, at that camp in contrast to the high rate, 40%, at Camps Bowie and Sevier, where there were only 436 entrants subsequent to October 15, 1917.

With few exceptions which are explained on the basis of a large percentage of recruits, the complication rate at all camps for the first quarter of 1918 showed a marked increase over the last quarter of 1917. The average rate for the latter period was 8% complications and for the former 25%. For the first quarter of 1918 it may be said that the camps had become stable. There were but few recent entrants; practically all men had become seasoned by several months of service. The seasoning of soldiers, with its resultant high carrier rate of the potentially dangerous group of pneumonia-producing organisms, makes plain the reason for the increasing complication rates and the almost universal high rate for the first quarter of 1918. Corrective sanitary protection against the transmission of the dangerous carrier group of organisms is our only hope for protecting men in large groups, be they civilians or seasoned soldiers, against a high carrier rate.

Since there was a low incidence of measles during the second and third quarter of 1918, the summer months, these two periods are not entered into in the present discussion.

OCTOBER-DECEMBER, 1918

In the following consideration of the last quarter of 1918, an attempt will be

made, as in the previous discussion, to show that the inadequacy of sanitary protection—with the resultant high carrier rate among seasoned soldiers, and the percentage of recruits at the several camps, were factors of prime importance in determining the measles complication rate. During this period the average complication rate for all camps was 26%. Since the rate for the first quarter is but 25%, it is plain there was no marked increase for the last quarter over the first. The first quarter of 1918 was a stable period, with partially seasoned troops and but few recruits. On the other hand, during the last quarter, the troops were composed of fully seasoned soldiers diluted with about 50% recruits. This dilution of fully seasoned troops by recruits is accounted for by the fact that during the summer and autumn of 1918 many divisions departed for overseas, and to replace these losses the camps were filled with recruits. Despite this exodus many seasoned soldiers, with their high pneumonia carrier rate remained in the camps; thus already established were innumerable sources for the extension of the carrier state among recent arrivals.

The lowest complication rate for this period was 7% at Camp Grant. At this camp were 66% recruits, and inasmuch as the complication rate for the camp was the same as it was during the fall of 1917, it is perhaps reasonable to assume that practically all cases of measles occurred among the new arrivals. At Camp Gordon there was a complication rate of 52%, the highest in any camp. There were 35% recruits at Camp Gordon, and in view of the complication rate we may assume that the majority of measles cases occurred among seasoned soldiers. Attention is called to the recruit percentages and the complication rates at these two camps because they represent an exception to the general rule, that the higher the percentage of recruits the lower will be the percentage of complication. Here the percentage of

recruits is calculated on the number of entrants during the two months prior to the peak months of measles cases.

PERCENTAGE OF RECRUITS DETERMINES COMPLICATION RATE

If the complication rate is analyzed on a basis of the percentage of recruits at the camps during the last quarter of 1918, it is found that at 15 camps having over 50% recruits, there were 18% complications. In this group of camps there were 3,164 cases of measles and 571 complications, or a complication rate of 18%. In contrast to this it is found that at 12 camps, where there were but 50% or less recruits, there occurred 2,999 cases and 847 complications, or a rate of 28%. It is then, the seasoned soldier, rather than the recruit, who is prone to complications and more liable to succumb.

If we still further analyze the complication rates on the basis of four groupings of camps arranged upon the percentage of recruits, the following table shows the result:

Groups	Camps having recruit percentage of	Cases	Complications	Percent
Group I (3 camps)	100 to 76	654	113	= 17.
Group II (12 camps)	75 to 51	2510	458	= 18.2
Group III (5 camps)	50 to 26	1282	239	= 18.7
Group IV (7 camps)	25 to 0	1717	603	= 35.

In the above tabulation it will be noted that as the recruit percentage decreases, or as the seasoned soldier percentage increases, the complication rate increases.

100% TO 76% RECRUITS

In Group I (camps having a recruit percentage of 100 to 76) it is found that the lowest complication, 6%, occurred at Camp Wadsworth. At this camp the highest incidence of measles was in December; in spite of the late occurrence of the majority of cases, there was a low complication rate. The men in this camp were of the late October draft. There were no seasoned soldiers with a high carrier rate; consequently there were no sources other than those among the recruits themselves; the complication rate for December cases might well be low

under these conditions. Attention is called to the fact that this was the only camp with 100% recruits for the last quarter of 1918 and that it had the lowest complication rate, 6%. In this respect it is similar to all camps for the last quarter of 1917. Its complication rate for 1918 should then be the same as for 1917, and that was the case. At Camp Sherman there was a proportion of 96% of September and October recruits to 4% of seasoned soldiers. About 60% of the measles incidence occurred during November; here the complication rate was 17%, or considerably higher than at Wadsworth. At Camp Beauregard the command was composed of 78% of September recruits and 22% seasoned soldiers. The majority of the measles cases at this camp occurred during November and December. It is, of course, not known whether there was a greater prevalence of the infection among the seasoned soldiers or among the recruits, but it is apparent that if 22% of the command were seasoned soldiers, the high carrier rate of the pneumonia group of organisms among such soldiers would furnish a high percentage of source for the recent entrants, who would acquire the carrier state more rapidly than at Wadsworth, where there were no seasoned soldiers. The complication rate at Wadsworth was only 6% compared with 22% at Camp Beauregard.

75% TO 51% RECRUITS

In Group II (camps having a recruit percentage of from 75 to 51) the lowest complication rate was 7% at Camp Grant and the highest 38% at Camp Wheeler. It is noted that the percentage of complications at each camp for the three-months period is not wholly significant. It is an average for those three months only; on analysis it is found, for example, that at Camp Pike there was a 15% complication rate for the three months, but for December alone there was a 30% rate. Again, at Sevier, the rate for the entire period was 18%, but

for the succeeding three months there was an increasing rate due to the increasing carrier rate resulting from increasing length of service. This is shown in the following table:

	Cases	Complications	Percent
October, 1918	27	2	7
November, 1918 . . .	63	2	3
December, 1918 . . .	40	14	35

Mention should here be made of the fact that while at Wheeler and Sevier, as at most camps, the increasing complication rate paralleled the increasing exposure to the pneumonia carrier state, there were exceptions to this rule as applied to the successive months in this period. But we have in this group of camps both seasoned soldiers and recruits; moreover the prevalence of complications in any month may be influenced by the predominance of measles cases among either the seasoned soldiers or the recruits.

50% TO 26% RECRUITS

For Group III (camps having a recruit percentage of 50 to 26) the lowest complication rate was 10% at Camp Lee and the highest 52% at Camp Gordon. The average was 18.7%. Here we have a low dilution of recruits; therefore we start with a high carrier rate already established among the seasoned soldiers. In this group the complication rate for October may be greater than that for December. This was so at Camp Meade, as is shown in the following table:

	Cases	Complications	Percent
October, 1918	55	11	20
November, 1918 . . .	161	22	13
December, 1918 . . .	103	10	9

This camp had a strength of 40,441 men and 14,000 entered between September and November. In view of the decrease, rather than the increase, in the complication rates for the successive months of the period, it is believed that the October cases occurred chiefly among the seasoned soldiers, and that from these as foci of distribution, the infection

gradually extended to the more recent arrivals. This involvement of new arrivals, with fewer carriers among them, reduced the complication rate for the latter months of the quarter. This explanation is offered simply to account for the decreasing complication rates by months, but here we are interested mainly in the average percentage of complications by three months periods, on the basis of the percentage of recruits in the group.

25% TO 0% RECRUITS

Group IV, the seven camps having a recruit rate of 25% or less, stands out as a striking example of the complication rate of measles as influenced by the so-called seasoning of soldiers. The lowest rate occurred at Sheridan where the complication rate was 13%. In view of the fact that there were no recruits at this camp, this percentage indicates that here there was good sanitary protection against the dissemination of the potentially dangerous pneumonia group. The highest rate was at Camp Jackson, where there was a 49% complication rate.

In this Group, consisting almost entirely of seasoned soldiers, in contradistinction to the other groups considered, it is found that there is a more nearly uniform rate for each succeeding month of the quarter. For example, at Camps Hancock and Taylor, where there were few recruits, it will be found in the following tabulation that there was a uniform high complication rate for all three months:

CAMP HANCOCK

	Cases	Complications	Percent
October, 1918	108	51	49
November, 1918	238	76	22
December, 1918	56	17	30

CAMP TAYLOR

October, 1918	435	136	31
November, 1918	152	48	32
December, 1918	24	7	29

For the seven camps in this group there was an average of 35% complications. This is by far the highest rate for any group, as well as for any period

among troops in the United States. It will be recalled that the average rate for the last quarter of 1917 was 7.8%. During this period all soldiers were recent entrants. For the first quarter of 1918 the rate had increased to 25%. During this period there were no recruits; camps had become stabilized; as a result the rates for all camps were similar. This was not so in the last quarter of 1918. During this quarter the camps were composed of over 50 recruits. Complications varied from 6 to 52% and the average for the period was 23%. Camps having the highest percentage of recruits had the lowest complication rate; while those having the highest percentage of seasoned soldiers had the highest complication rate. The sum total of greatest exposure among troops in the United States occurred in that group of camps where there was the highest percentage of seasoned soldiers for the last quarter of 1918. This is represented by a 35% complication rate among measles patients. These increasing rates parallel the increasing exposure, the increasing transmission rates, the cumulative exposure and the cumulative carrier rates.

Measles and its Complications

	Measles Cases	Complications	Percent Complications
October, 1917	1666	103	6.1
November, 1917	13161	1006	7.6
December, 1917	14487	1212	8.3
Total	29314	2321	7.8
Jan.-Mar., 1918	8262	2072	25
Oct.-Dec.	*4446	*810	*18
	**1717	**603	**35
Total	14425	3485	24

*Camps having 100% to 26% recruits.

**Camps having 25% to 0% recruits.

This tabulation is a consolidation of measles cases, complications, and percentage complications for the successive periods of the war; those for 1917 have increasing complication rates; while the rates for 1918 are greatly in excess of those for 1917. During October, 1917, complications caused but 13 deaths per 1,000 cases of measles; while for the

period October-December of the same year there were 20 deaths per 1,000 cases. In 1918 among troops in training in the United States, including recruits, there were 23 deaths per 1,000 cases, while for France there was an increase of 45 deaths per 1,000 cases of measles. Notwithstanding bettered hospital care, the case fatality rate increased because the pre-hospital carrier rate had increased. If all measles cases had occurred prior to the so-called seasoned soldier stage, the mortality attributed to this disease would have been reduced more than one-half.

During the period covered in this paper there were definite regulations relative to non-crowding and the use of the mask and the cubicle on measles wards. These regulations had as their basis the prevention of droplet infection; yet it is apparent from the record here presented that these measures did not prevent an

increase in the carrier rate for the potentially dangerous group of pneumonia organisms. In thus closing the minor transmission route of droplet infection, there were left unobstructed the two broader avenues of transmission; insanitary eating utensils and hand to mouth dissemination.

The tabulations are not carrier beyond 1918 because demobilization then commenced; could comparisons have been continued the results might have proved interesting, as in February, 1919, was issued the first general order relative to the sterilization of mess kits for the prevention of epidemic diseases. In considering mortality, the prevention of the epidemic diseases is not the first step; that step is rather the prevention of complications; the prevention of the carrier state, and this necessitates inter-epidemic, as well as epidemic, sanitary protection.



TOBACCO IN ITS RELATIONSHIPS TO PUBLIC HEALTH

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THE use of tobacco has increased enormously in the United States in the past decade. Within the last 45 years the use of cigarettes has increased 700% in the United States. During this period certain diseases have increased very largely, such as heart trouble, apoplexy and Bright's disease. These are all primarily diseases of the blood vessels. These diseases are much more prevalent among American men from 45 to 60 than among any other nationality in the civilized world. They are much more prevalent among American men than American women. The long continued use of tobacco has a very marked effect upon the blood vessels of man and animal. Is it a mere coincidence that the increase

in these diseases goes along with the increased use of tobacco or not? Is it a mere coincidence that American men who use more tobacco than American women are much more susceptible to these diseases or not? Is it a mere coincidence that Americans who use much more tobacco per capita than the English should be affected by these special diseases? Thinking people are beginning to ask the question, is tobacco one of the contributing factors in the recent increase in these so-called diseases of degeneration or not?

Many untrue things have been said about tobacco. The person who is trying to prove that tobacco is harmful often uses every argument available. Many of these arguments will not "hold water."

They may be merely wanderings of the imagination, hearsays and ideas yet unproved. There is little evidence to support the sweeping statement that cigarette smoking in itself causes feeble mindedness and criminal tendencies in youths. It is probably true that cigarette smoking has a detrimental effect upon the immature brain cells of the youth, although to what extent this is true has not yet been found out. It probably is not entirely true that cigarette smoking accounts for all the low grade work done in school on the part of the smokers. It is true that feeble minded and criminally inclined boys are more apt to smoke than normal boys because they have less appreciation of the value of health, the wishes of parents and the disappointment of others. They also have less will power for breaking bad habits. So it might be said that smoking is as much an indication of subnormality as is subnormality a result of smoking. Poor school work may be the result of a general lowered morale of which smoking is one of the manifestations. Boys who smoke often show up much more poorly in school than those who do not smoke. It is often the case that the smoker is inferior to begin with. The smoker, when he becomes the non-smoker, generally improves in his work, due perhaps quite as much to his newly awakened interests as to his quitting smoking. When extravagant statements are made as to the injury done by tobacco, observing people learn that many of these statements are not true. They therefore fail to be impressed by them or perhaps are even made antagonistic. Thousands of the finest men in the country smoke and so far as the casual observer is concerned he cannot see any great harm done to them.

The question is, Is the increased use of tobacco detrimental to health? There are indications that it is. An increasingly larger number of business men are getting the feeling that the use of tobacco interferes with working efficiency at least

in youths. They are thus becoming less inclined to employ the youthful tobacco user. The statement has been made by prominent physicians and hygienists that adults who live a vigorous out-of-door life may use tobacco in moderation without producing evidences of injury. The recent findings of the Pasteur Institute would indicate that the long continued use of minute doses of poison ultimately causes appreciable harm. This then would indicate that even the so-called light user is measurably injured. One's judgment as to the harm done is worth very little. Most men seek to excuse themselves for their bad habits. The beginnings of a diseased condition are often observed by the physician long before they are suspected by the patient.

Tobacco has a specially selective effect upon the nervous system. It first acts as a stimulant, then finally as a depressant or narcotic. Physical and mental work are improved at the beginning in smoking, but are diminished in the end. Nervousness in the person who is of a nervous temperament is increased by the use of tobacco. It is also true that smoking is an indication of nervousness as well as is nervousness a result of smoking. The tired business or professional man is soothed and made comfortable after his evening meal by his smoke. He is temporarily relieved of his nervous tension. This feeling of comfort is followed in time by a slightly increased nervous irritability which necessitates another smoke. The final result is that the nervous man is made more nervous through the keeping up of the vicious circle.

Tobacco is, to a certain extent, a habit-forming drug. Some people become a habit-slave more easily than others. This in itself is most undesirable. The nervous person is more apt to become a habit-slave than others because his nervousness is temporarily relieved and he is less apt to be able to control bad habits. Extreme nervousness predisposes toward lack of will power.

The athletic trainer has observed,

though not often through the application of modern scientific methods, that the use of tobacco interferes with athletic efficiency in his men. For this reason he prohibits its use. Studies of college athletes would indicate that the most efficient men are the non-smokers. The power of the voluntary muscles is diminished on account of the ultimate depressing effects of tobacco upon the central nervous system. At Yale and Amherst and other colleges it has been noted that the non-users gained over the users in height, weight, chest-girth and lung capacity.

Nicotine is probably the most important poison in tobacco. It causes a marked increase in blood pressure through the stimulation of the adrenal glands. In time this extra strain upon the blood vessels produces thickening or sclerosis. Nicotine when taken into the system directly is a very powerful poison. A few drops are enough to kill a man. Most of the nicotine is destroyed in the smoking, so that but very small quantities get into the system at a time. This accounts for the fact that men use it for years without any apparent amount of harm.

Experiments worked out upon the Springfield College students would indicate that smoking causes an increase in heart-rate and blood-pressure after muscular exertion over and above normal, and that these were slower in coming back to normal than when smoking is not indulged in. This would mean unnecessary work done by the heart and blood vessels. The experiments also showed that muscular accuracy was diminished, because of unsteadiness of the skeletal muscles. Similar results have been gotten in rifle target practice in the army.

At tuberculosis sanatoriums it has been found that the mortality in the smokers

is higher than in the non-smokers. Tobacco smoke will irritate the mucous membrane of the throat and breathing tubes to the extent of lowering resistance to bacteria and thus make respiratory disease more frequent.

Life insurance companies find that the length of life of the smoker is less than that of the non-smoker. Recent experiments have been made upon groups of young men in which it is indicated that smoking lowers physical endurance. The death rate of children under one year of age of mothers working in the cigar factories of Vienna is high as compared to mothers working in other factories.

Tobacco has no place in medicine, therefore it is not listed in the pharmacopœia or official list of drugs.

Tobacco does give pleasure to the user through its sedative effect upon the nervous system. This pleasure, however, is overbalanced by detrimental effects. Many men are willing to have the pleasure at the expense of health and injury. Outside of the pleasure and satisfaction derived it is pretty difficult to recommend its use upon any other grounds, surely not on the ground of promoting health. In addition there are a good many arguments resulting from recent investigations which would substantiate the statement that tobacco is injurious to health. It is fundamentally a narcotic drug and all narcotic drugs are dangerous when used habitually and in substantial doses. Years of extra work done by heart and blood vessels mean premature wearing out and thus the shortening of life.

If tobacco is a serious injury to our public health the fact should be determined in a scientific way and proper measures taken by health authorities along lines of prevention.



HEALTH INSTITUTE

Make your arrangements so that you can attend the Health Institute of the A. P. H. A. in New York City one week before the Annual Meeting.

COUNTY HEALTH ADMINISTRATION IN LOS ANGELES COUNTY

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Read before Public Health Administration Section, American Public Health Association, at San Francisco, Cal., September 15, 1920.

Progress in public health work demands simplified administration. Los Angeles County is striving to meet the demands of efficiency plus economy by effecting consolidation of health services with cities. The County has already established a co-ordinated social service with the cities within it. The County Health Office is meeting the problem by making contracts with the cities for specified units of service.

IN outlining the problem of county health administration I find it naturally divides itself into the following heads:

- I. Political.
- II. Legal.
- III. Epidemiologic.
- IV. Economic.

When it is considered that there are about 3,000 county governments in the United States, and that at least 50% of our people reside in rural districts, with the enormous importance of the food supplies produced in rural districts, it behooves us to study carefully all phases of betterment of the public health of counties. It is the purpose of this paper to contribute from the experience of the last six years a brief sketch of our successes and failures in reorganizing the public health work of Los Angeles County.

I. POLITICAL CONSIDERATIONS

Until quite recent date, an efficient county government was almost unheard of. Founded upon the need of administration of local justice, and later developed as a means of administering poor relief, the building of roads and bridges, etc., county government

later expanded to meet the lack of any other local government, and, in the opinion of most authorities, has been the playground of politicians. Not only has the county been put to the severe test of political efficiency for itself, but it has had to struggle, on the one hand with domination by the state, and second with the growing competition of the enlarging functions of cities. In its earlier development, the county served as an instrument for the local functions of the state government. New counties were formed from time to time as needs arose. In each of these counties was a loose but more or less complete organization, which was dominated, to a large extent, by the state government. The grave defect in county government was the lack of one responsible head and the serious lack of flexibility for legislative enactments. Many special bills were passed by legislatures creating additional taxes for counties, and imposing administrative schemes, largely to be controlled by state machinery.

On the other hand, the county has had to face the competition of the highly differentiated functions of mod-

ern city government reaching out in public welfare work, such as milk inspection, food inspection, and especially a higher type of educational and recreational activities. Public health, so far as most counties have been concerned, had scarcely received serious attention until the last few years. The development of efficient public health service for a county rests upon the development of stable, efficient, general political government for counties.

Gilbertson states as follows: "Ideally (the county) is to be a supervised local subdivision of the state administration, such supervision to insure strict accountability, but to be unobstructive; it is to be relieved by the state of not a few incompatible, back-breaking burdens. It is to have, with some necessary limitations, a free hand in making over its internal organization, for whatever obligations may be laid upon it in the future." (Page 168, "The County.")

In another section he states, "The cornerstone ever is simplicity; one set of officials to elect and watch, one place to go to get things done, one source to which to direct criticism when things go wrong."

In fulfilling these ideals, the people of Los Angeles County adopted, in 1912, the charter form of government. In the words of Judge Lewis R. Works, the aim of the charter was as follows: "The average American citizen knows less about the government of his county than about any other public matter which merits his attention. This is owing to the fact that county government, so-called, is not county self-government at all, but simply state government of counties. No man can be expected to become easily intimate with a government the source of which is far away, even though it prescribes a system local in its application. The Los Angeles County charter is a concrete presentation of the idea, cer-

tainly a just one, that the right of local self-government belongs to a county as well as to any political subdivision."

Authority at present is strongly centralized in the Board of Supervisors, which is a close approximation to the commission form of city government. The Board of Supervisors is required to publish a code of rules prescribing the duties and management of all subdivisions of the county and enforce these rules. The number of elective officers was reduced, the merit system adopted through Civil Service, the fee system for compensation for officers was abolished, and many important powers and duties were created, all aiming towards public efficiency. The charter of Los Angeles is regarded by authorities as being a long step toward the fulfillment of the ideal of county government. With this introduction into the problem, I will now consider the problems more closely related to public health.

In assuming charge of the Health Department in 1915, we found already that very great progress towards efficiency had been secured in many lines of activity. Where the County could perform public business for cities more economically or efficiently, a reorganization was already in progress. The County had assumed such functions as the distribution of outdoor relief, assessing and collection of taxes, provision for free libraries, supervision of standards for weights and measures, and provisions for hospital care of the poor. Analysis of the public health situation at that time revealed the following:

II. LEGAL CONSIDERATIONS

The State law required that each county must maintain a County Health Officer, whose jurisdiction was the unincorporated territory alone. The law did not provide for the assumption and performance by the county health

officer of the duties of city health officers. Each city was required to provide a board of health or health officer to function for said city. In addition, cities could maintain milk inspection in the rural districts under a special act, and school boards could also maintain health supervision of school children by districts, independently of any other existing health authority. In addition to these local authorities, there were several state bureaus supervising many phases of public health throughout the county. Birth and death registration was again subdivided into independent registration districts, not coördinated with the County Health Office, and with no central bureau in the county.

We had, consequently, in 1915 this problem: A county of about 4,000 square miles with a health jurisdiction only over the unincorporated districts, approximately 3,400 square miles; no central bureau of registration of births and deaths, no plan of coördination of health work, and with 37 independent municipal health officers, mostly part-time, and 167 school districts, each of which was independently charged with the health supervision of all matters save contagious disease.

Progressive cities had reached out into the county and had organized milk and food inspection, so far as their respective cities were concerned. The boundary lines of school districts not being coextensive with municipalities, certain city boards of education were actively supervising the health of city schools, though the schools were actually located in unincorporated territory.

As a result of a study of these complex factors, it became at once apparent that the success of the administration by the County in many other departments for cities, such as poor relief, etc., might be duplicated along the lines of public health. To this end a

law was secured providing for the assumption and discharge of any or all functions relating to public health in any city by the County Health Officer, through contracts for service, to be made between the governing bodies represented. This was the first step towards the formation of a coördinated health service throughout Los Angeles County.

During the last two years the County Health Office has obtained contracts with three cities in Los Angeles County for the performance of their public health work, and this work is being efficiently carried out. We do not claim that this form of organization is as yet perfect, but as an entering wedge, the flexibility of the system enables us to make much greater progress than with a more rigid law. There is serious need of State participation in the formation of contracts of this nature, if not for the actual financial aid, then for the moral support and to solidify public opinion.

III. EPIDEMIOLOGICAL FACTORS

The plan of centralized public health control by the county in Los Angeles is strongly supported by a consideration of the factors relating to the control of contagious disease. The spread of infectious disease is not controlled through imaginary political boundary lines. No city, however well organized, can hope to prevent the spread of contagious disease by purely local work. Neither can the rural district be well protected, on account of the diffuseness of the problem, by supervision from the county seat.

In matters such as water supply, disposal of sewage and other wastes, the city cannot afford to ignore sanitary conditions at its boundaries. Since the food supply of a great city is collected over a vast area, there must be complete coördination of all food inspection carried on throughout the entire

county. Furthermore, with a population of close to a million in Los Angeles County, with the rapid growth of an electric transit system, and also the tremendous use, both in business and for pleasure, of the modern automobile, our administrative unit must cover a great district, embracing fully the possible sources of contact of people or pollution of public utilities. No health department can control effectively the spread of contagious disease except through complete coördination of the personnel of health departments of the territory through which the spread of disease is a logical consequence.

Los Angeles County has about 1,000 square miles of watershed, mainly in the great mountain resort area known as the Angeles Forest Reserve. It also has 30 miles of beach frontage on the ocean, which is a great natural playground. Not only have we the problems peculiar to the hygiene of recreation, but it is becoming more increasingly difficult to protect the purity of our water supply and to decrease the danger of contact infection at the beaches, largely because of modern rapid transportation. It is certainly unjust that the County should have the entire burden of sanitation for this enormous holiday or transient influx of urban population into the resort areas of the rural districts.

The public school situation also bears out the argument for county centralization in public health matters in Los Angeles County. It happens in many instances that children reside in one health jurisdiction and attend school in another. A third factor enters in where the school board maintains a health supervision of its own. Nevertheless, when contagious disease arises, either or both health officers must be consulted. Efficiency under such conditions is almost impossible.

We come finally to the fourth and

last consideration for county supremacy of public health, the economic factor of business efficiency.

IV. ECONOMIC FACTORS

These factors have to do with the question of taxation and the problem of efficiency of the health department itself. Modern business efficiency demands economy of administration, combined with the satisfied customer, which is the public. In analyzing the question of taxation today, the citizen at present is taxed,

First, by the U. S. Government.

Second, by the State indirectly.

Third, by the County.

Fourth, by the City, and

Fifth, through special acts, such as the school tax and other forms of district taxation.

In my opinion, any totally new form of health administration requiring the organization of a special district, is doomed to failure by reason of its taxation features. In the present county plan we are following largely the idea of the union school district. School authorities long ago found it necessary to combine various small schools for the purpose of economic administration and to provide better salaries for the teachers.

Our present plan supposes that at some time in the future, all the municipalities in Los Angeles County will, from a practical standpoint, unite in budgeting their needs and will lay out one comprehensive plan for the performance of the health work of arbitrary districts under a local full-time health officer in each section of the county.

The citizen of each municipality is already supporting the county government, and hence the health department through the general fund of the county. The public is already overburdened by taxation. It is a serious matter for us to consider how far we may go in our demands for public health if we

do not reorganize our expenditures by proper budgeting of related departments. Furthermore, we cannot expect the coöperation of the average citizen until we adopt uniform quarantine and sanitary regulations throughout the county. Much of the public dissatisfaction with health matters today rests upon the multiplicity of organization and the variance of the rules of these organizations relating to quarantine and sanitation.

There is another and very important reason why city and county health work must be coördinated, and that is the necessity for the development of the health center idea. Public health work must be made concrete to the people. It must do this through local work of a simple nature, adapted to the community for which the work is organized.

The smaller cities are unable financially to pay for full-time health service. The county is unable to organize effectively a vast rural district without the social center stimulus existing in each small city, which is the focus for the surrounding rural territory. On the basis of this conception, the Los Angeles County Health Office has, briefly, accomplished the following:

Since 1915 it has succeeded in formulating a policy and has committed the Board of Supervisors thereto. Contracts have been made by the County

for the performance of functions relating to public health, with three cities in the county. Several others are contemplating joining in this service soon. The plan embraces the grouping of a certain population in the rural districts surrounding the cities, and the building up of a full-time health service consisting of a health officer, nurses and clerical assistants.

Second, a beginning has been made in the coördination of school work by joint employment in school districts of public health nurses, and the development in such districts of a rudimentary form of health center.

Third, a Central Vital Statistics Bureau has been created by law, embracing the records of the entire county, including the cities.

Fourth, the budget of the County Health Office has grown from about \$7,000 to nearly \$70,000 under this plan of administration.

Finally, in order to secure the needed development of this plan throughout the state, some form of State subsidy must be obtained. The full support, both financial and moral, by the State government is necessary for two reasons: First, in order to coördinate more effectively the activities of the various units, and second, in order to furnish the greatest possible incentive to local health organizations over the entire state.



An Educational Field for Nurses.—That the nurse, both public health and in private work can wield great influence in the education of the people is set forth by Harriet N. Leete, R. N., in a recent issue of the *American Journal of Nursing*. Miss Leete notes that pertinent facts should be presented to our people in such a way that every one may realize the situation. One of these is the truth that as a nation we Americans are woefully lax in the care of our children. Who is there that better accomplish the diffusion of the knowledge of this fact than the nurse, whose opportunities are in

almost every household, and whose influence is far-reaching.—(M. B. D.)



Health of the Summer Camp.—The ever increasing popularity of the summer camp for young people of either sex and even for young children leads John Foote, M. D., to urge very properly in *Mother and Child*, that every parent who intends placing a son or daughter in a summer camp, owes it to himself or herself to enquire in writing, "What health protection and what health teaching will the camp give my child?"—(M. B. D.)

VIRGINIA PLAN OF COOPERATIVE COUNTY HEALTH WORK

W. F. DRAPER, *Passed Assistant Surgeon, U. S. P. H. S.*
In Charge Coöperative Demonstrations of Rural Sanitation in Virginia
Richmond, Va.

In the development of public health activities the particular needs of the locality to be served should be of prime consideration. If at the start it is evident that only one line of work is possible, it should be that which will yield the greatest returns in lives saved and sickness prevented for the money available.

IN Virginia, as in other states, there are many rural communities in which public health work, except possibly of the most rudimentary and transitory character, has never been undertaken. In these sections, the incidence of typhoid fever, dysentery, hookworm disease, infantile diarrhoea and intestinal parasites is high, and the annual losses from these sources is so great that their reduction constitutes one of the most urgent duties of the State Board of Health. During the period October 1, 1908, to September 30, 1909, it is estimated that there were 14,000 cases of typhoid fever in Virginia. This has been reduced in successive years to the minimum incidence of 2,900 cases during the year October 1, 1919, to September 30, 1920. The actual number of deaths during that year was 267. A very large reduction has taken place in the cities where health departments have been strengthened and public sewerage and water supplies have been developed. The incidence in the smaller towns and rural districts has decreased in less proportion.

In order that the health problem may be clearly understood, it should be noted that the cities in Virginia, although geographically within the counties, are politically distinct and separate so that the county governments receive no income from the cities and are dependent upon their own sources of revenue which, under the present system of taxation, are very limited. The county treasury is al-

most invariably drawn upon to the full extent of its credit during the year, if indeed, as is only too frequently the case, it is not deeply in debt.

Under these conditions, and with a rural population not over anxious to change its ways, the problem lay in finding some means whereby practical assistance in establishing and carrying out the fundamental principles of public health work might be made possible for any county in the State. Through a coöperative arrangement with the Public Health Service, the State Board of Health and the State Council of Defense, the following plan was put into effect as a demonstration:

To a limited number of counties appropriating \$1,000 for coöperative health work, the State and Public Health Service allotted \$500 each, making available a total budget of \$2,000 for a county. From this amount, a man, previously trained in the fundamental principles of rural sanitary work and known as a county sanitary officer, was employed in the county for a year at a salary of \$1,200. The remaining \$800 was used for providing automobile transportation and defraying incidental expenses.

A commissioned medical officer of the Public Health Service was detailed to coöperate with the State Board of Health by taking charge of the general administration of the work, and two officers of the Service were assigned to groups of five counties each for purposes of super-

vision. Their duties were to plan and supervise the work of the sanitary officers, to secure the passage of local ordinances and regulations, to conduct educational work through public addresses and illustrated lectures, and to arrange and carry out coöperative health measures with county boards of supervisors, county boards of health and other organizations and agencies concerned with the improvement of the public health.

The demonstrations were conducted in accordance with the following program:

1. Make a sanitary survey of the towns in the county; recommend such sanitary ordinances as may be necessary for placing these towns in a sanitary condition; secure passage of same by town councils; and give all possible assistance in having such ordinances put into effect and carried through to a conclusion.

The above relates principally to the passage of a sanitary privy ordinance and the installation and operation of a system for the sanitary disposal of human excreta in towns.

2. Introduce measures for the provision of sanitary closets and a safe water supply at every schoolhouse in the county. Secure funds for same, supervise the work of construction and see that it is carried to a successful conclusion.

3. Secure the installation of sanitary closets and safe water supplies at individual homes through the county as far as possible. (The country homes sanitated in our counties range from 500 to 1600). This work is accomplished by education, persuasion and voluntary coöperation on the part of the people.

4. The creation of popular interest and sentiment for public health work to the end that the county will desire a more complete health organization the following year or, at least, continue on the same scale.

5. Coöperate with the county board of health, and, when so requested, act as its agent in carrying out measures

for the control of communicable diseases.

6. Give educational talks in the schools on school hygiene and public health, and organize school health leagues whereby each school may have a health organization composed of the pupils themselves who serve as health officers and assist the county sanitary officer in maintaining the school and its surroundings in a clean and healthful condition.

PRACTICAL DETAILS OF THE WORK

While rural public health work naturally includes all measures for the prevention of disease and the promotion of health, it is logical to attend first to those conditions which are responsible for the greatest incidence of disease and can be most easily remedied. In Virginia, therefore, the principal efforts have been first directed toward the safe disposal of human wastes and the protection of water supplies.

There are a number of methods by which this may be accomplished, and it has been a definite policy to secure the installation of the best type of closet possible under a given set of conditions. There are communities, for example, which can well afford to install public water supplies and sewerage systems. They are urged to accept nothing less. Other towns may be provided with water and sewerage, but permit a number of surface closets to exist on premises which might be connected with the sewer. Under these circumstances, nothing less than flush toilets and sewer connections are acceptable. In one town of this character, the employment of a good deal of strategy was necessary to prevent persons who were able to connect with the sewer from installing sanitary privies of the box and can type, which were being introduced into the unsewered outskirts of the town.

The detailed character of the work performed is apparent from the monthly report form, shown on following page.*

*Other forms used for other details of administration, including the financial statement, may be secured by addressing the author.

METHODS EMPLOYED

I am inclined to believe that one of the greatest uncertainties existing in the minds of those associated with county health work is in regard to the relative

merits of educational measures and the securing of voluntary coöperation on the one hand, as contrasted with the enactment of comprehensive health laws and efficient execution of them on the other.

ENNION G. WILLIAMS, M. D.,
STATE HEALTH COMMISSIONER

W. F. DRAPER, M. D.,
PASSED ASSISTANT SURGEON U. S. PUBLIC
HEALTH SERVICE
IN CHARGE RURAL SANITATION

County

CO-OPERATIVE DEMONSTRATIONS OF RURAL SANITATION

U. S. P. H. S. SUPERVISING HEALTH OFFICER

COUNTY SANITARY OFFICER

MONTHLY REPORT NUMBER PERIOD

YEAR OF WORK PRESENT YEAR BEGAN

	During Month	Total to Date
Homes surveyed		
Homes resurveyed		
Sanitary privies installed:		
L. R. S. type (septic privy)		
Concrete vault type		
Box and can type		
Pit type		
Chemical type		
No. above installed where no privy existed before		
Water sewerage:		
Septic tanks installed		
Sewer connections secured		
Wells new		
Wells improved		
Springs improved		
Water connections, city or central supply		
Water samples analyzed		
Nuisances abated		
School Sanitation:		
Total number schools in county		
School houses inspected		
Number schools provided with sanitary toilets		
Number schools without sanitary toilets		
Schools provided with improved water supplies		
Sanitation of Food Establishments:		
Number restaurants, soda fountains, etc., inspected		
Number of improvements secured		
Educational:		
Public talks by supervising officer		
Public talks by county sanitary officer		
Number in audiences (approximately)		
Bulletins distributed		
Health signs posted		
Business letters written		
Newspaper articles		
Miscellaneous:		
Special meetings and conferences		
Additional funds secured		
Purpose to which funds were applied		
Homes, stores, dairies screened		

News: (Brief statement of any other work accomplished and description of matters of local or general interest may be continued on extra sheets).

Both ways have been tried, and the demonstrations have been interesting and replete with valuable information.

In one county in which a special demonstration of county health work was conducted on a somewhat larger scale than that described above, the health officer first secured the passage of rigid local sanitary laws and then proceeded to enforce them. No protest availed; no excuse was accepted. A summons to court and a swift fine were the inexorable fate of all who refused or neglected to comply with the law. Mass meetings of indignant citizens were held to protest against the methods of the health department. Invariably the health officer was present to enjoy the occasion and invariably were the rebellious factions exposed in their ignorance of the fundamental principles of health and sanitation and forced to take their seats, followed by the ridicule of those who likewise came to complain, but found the tide too strong to stem and rapidly took their place on the side of the health officer. Such meetings usually wound up their sessions by passing resolutions endorsing the work of the health department.

Time passed. Deplorably filthy conditions which had been sore spots in the county for years were replaced by modern sanitary equipment. The entire community improved in appearance and was more comfortable than it had ever been before. The children talked at home about the interesting things which the health officer and the nurse had told them, and sought the aid of their parents in working out the health problems given them at school. Every now and then they returned with prizes for excellence in an essay on some health subject, or for winning in a competition for the greatest improvement in personal health.

Clinics were established at the health department where physical defects were corrected, teeth repaired and lungs examined. Conscience-stricken mothers whose husbands had at some time made uncomplimentary remarks about the

health department made voluntary donations to the clinics in order that the work might be extended. In short, a county which, prior to the demonstration, maintained one untrained inspector at a salary of \$1,500 per year, appropriated for the year following the demonstration upwards of \$13,000 for the maintenance of its own health department entirely independent of outside assistance.

In one of the counties where the plan called for the employment of a county sanitary officer only, it was decided to enter into an intensive publicity campaign with a definite organization for carrying out the movement. The campaign was to reach its climax during a certain week in April to be known as "Sanitation Week," and during this week an effort was to be made to have every home in the county provided with a sanitary closet.

The organization, which consisted of interested and public spirited citizens in every district of the county, and the publicity, which was exhaustively conducted through every possible channel, were accompanied by a wealth of detail.* Suffice it to say that the notices sent from the office of the sanitary officer were, in the final analysis, very definite instructions to comply with the law and, although not stating in so many words the penalty for non-compliance, it was implied that dire consequences would follow.

The outcome of the campaign was striking. A total of 2,094 sanitary closets of various types was constructed in the county during or immediately following "Sanitation Week," and this, as far as I know, is the largest result ever accomplished by one man in one county in a year.

As striking and convincing as the demonstration in these counties may be, they cannot be accepted as conclusive, or even reasonable evidence that the methods employed are models to be followed in county health work in general through-

*See *Public Health Reports*, Oct. 1, 1920.

out the state. They are applicable only to certain sets of conditions in the hands of certain men. That which these particular men in these counties have accomplished, many others could also do, but, to be equally successful, each would have to proceed in his own way.

I doubt very much if in any line of work it is of more importance that a man should feel free to do things in the manner most natural for him than in rural health work. The supervising officer may lay out the plans, define the general policies to be followed, and insure that satisfactory progress is made, but the worker must be given a free hand to carry out the details in accordance with his own individuality. He is absolutely powerless to render his most efficient service and realize his fullest possibilities if compelled to assume the personality of another. If he is unworthy of this degree of responsibility, he is unfitted for the job.

In contrast with the work in which the invocation of the law has been the primary and, perhaps, the chief reliance, there are other demonstrations in which the slower methods of education and the securing of the voluntary coöperation of the people have been the principal stock in trade.

Thousands of surveys of individual homes have been made and, in every instance, the occupant has received information as to the reasons why certain diseases have occurred among the members of his own or his neighbor's family. He has been shown insanitary conditions on his premises and given instructions and assistance in correcting them. In many of the demonstration counties may be seen 500 homes or more with sanitary means of excreta disposal, the result of the educational effort of one man in a county. The great majority of these homes were sanitized for no other reason than that the occupant understood why it was to his advantage to make the changes and voluntarily did the work.

In a certain Virginia county in the early part of 1919, the citizens of one district stopped their work and travelled several miles to tell their supervisors that in their opinion rural sanitation and everything connected with it was ridiculous nonsense and that the real object of the proposition was to furnish a job so that somebody might travel up and down the county while they paid for it by the sweat of their brows. Owing to several months of persistent effort by friends of the measure, the appropriation was finally passed and the work inaugurated. At the end of the first year about 2,000 families had been visited by the sanitary officer and informed in regard to health matters. Four hundred home owners had voluntarily made the fundamental sanitary improvements. These are only figures, the interesting part of the story lies in the fact that, at the end of the year, when a second appropriation came up for consideration, there were 25 people at the meeting to urge its passage and not one to speak against it. The motion to pass the appropriation with an increase of 50% over the appropriation of the previous year was made by the supervisor representing the people who so bitterly opposed it the year before.

This, to me, is an example of educational work of the highest type. The essential fact is that the people of that county came to understand the real purpose of the work and the benefits to be derived from it. A firm foundation has been laid, and, at the present time, there is work being accomplished which no one thought possible, least of all the local people themselves.

As a general rule, I believe that it is safe to assume that it will be difficult, if not impossible, to secure local coöperation and appropriations unless the majority of the people understand the reasons for the work and really want it done. As educational measures progress and the number of supporters increases, the law may be enforced for the control

of a recalcitrant few who are normally present in every community.

By the development of local sentiment for public health work, the legislators of the state may be induced to make more nearly adequate appropriations to the end that health education and the enforcement of health laws may be uniformly carried on throughout the state.

RESULTS OF THE VIRGINIA PLAN

While there are many phases of health work which can be tabulated only with the greatest difficulty, if at all, it is perhaps reasonable to assume that the actual construction work accomplished and the success of the plan in perpetuating itself form a basis upon which its general effectiveness can be rated.

The number of sanitary closets of various types installed in ten demonstration counties in Virginia during the first year of work under the plan of the county sanitary officer is as follows:

Septic privies and tanks.....	300
Chemical type	124
Concrete vault type	144
Box and can type.....	2,918
Pit type	1,991
<hr/>	
Total	5,477

Of the ten counties which appropriated each \$1,000 for coöperative health work during the first year, two made appropriations each of \$5,000 for the

second year. The work in these counties will be conducted by a complete health organization, operating on a \$10,000 budget made possible by state and international health board coöperation.

Of the remaining counties, six provided for the continuance of the work a second year and each increased its appropriation by 50% in order that salaries of the sanitary officers might be increased. These counties are now working on a \$2,500 budget, \$1,500 being contributed by the counties and \$1,000 by the state. In addition to the above appropriations, the counties have set aside more than \$10,000 for the sanitation of their schools, and, in this sum I am not including appropriations amounting to \$7,000 which were made, but which are not available because the unusual conditions of the money market have made borrowing difficult. It will be noted that two counties have apparently not continued their appropriations. One of these has, through its various civic agencies and private organizations, contracted to make available a sufficient amount to support a complete health organization, provided the Board of Supervisors will do its share. The other, although heartily commending the work and testifying to its appreciation of the excellent efforts of the sanitary officer, had just bonded itself to install a sewer system and really was unable to raise the additional money.



The Program for the Fiftieth Annual Meeting of the A. P. H. A. plans for the sectional papers, papers before other associations, a Health Institute and a Health Exposition. Four reasons why you should attend! New York City, November 8-18, 1921.

CANTON'S NEW KUNG YEE HOSPITAL

A MERICANS in general have but an imperfect idea of the progress of medicine in the Orient. The conservatism of China through countless centuries is considered even by intelligent people to include even till today all phases of existence, but it is nevertheless true that the recent awakenings have been extraordinary. Being aside from the business world the knowledge of what has been done there in sanitation and public health is fragmentary. The

Chinese medical periodicals tell of technical medical work and research, while some popular phases have been presented in past issues of the A. J. P. H., which have presented the remarkable accomplishments of Dr. Peter, who adapted 20th century American inventiveness to the psychology of the Chinese people.

Quite recently there has passed through this country Dr. Shu Fan Lee, who is the first Chinese health officer of a Chinese district. He came here in the



影撮生病護女男及生醫員職院醫公東廣

Kung Yee hospital staff. Medical staff in dark, nursing staff in white. Americans will be surprised to see so strong and bright a corps of native medical workers in a Chinese Hospital

interests of funds for the Kwong Tung Kung Yee Medical College and Hospital, and he has given the JOURNAL an opportunity to get at first hand some of the details of a very modern medical work in the celestial kingdom. Dr. Lee, it should be said, sought endowment for the institute he represented among the Chinese societies of the country. He did not appeal to the American purse and his visit here became known through the publicity that his movements occasioned.

The picture of the Kwong Tung Kung Yee Hospital building in Canton gives at once an idea of the dignity of the establishment which in December, 1908, was organized when a dozen prominent Chinese met with Dr. P. J. Todd. Dr. Todd is a graduate of Kansas Medical

opened in a rented building in 1909 and was settled in a location fairly near the center of the city. The avowed object of the Committee, a group of citizens serving without compensation, was to establish a medical school where the best modern methods of healing might be taught, to establish a school of modern dentistry and a school of pharmacy, the combined schools to be an influence towards the bettering of the sanitary conditions of South China. In order to do a successful work and at the same time a practical work, coöperation has been sought at all times with the missionary physicians. Coöperation between the Chinese Committee and foreign and Chinese physicians was established as a foundation stone in the school, with its



Kung Yee Medical School



Kung Yee Hospital, Main building

College and met with this group of Chinese in the Bethesda Hospital already established in Canton. The prime purpose was to formulate plans for a medical college. It happened that in that same year the medical college connected with the Canton Hospital had been closed. The members of the Presbyterian Mission were anxious to found another college but the home board found itself unable to undertake such a project. The immediate outcome of the meeting with Dr. Todd was an agreement to find 50 men to contribute \$100 each and to become members of an Organizing Committee, which within the next year gathered an additional sum of \$22,000.

The Kwong Yee Medical College was

instruction to be given in the Chinese language and with perfect freedom of religious belief. Its code of regulations was formulated by the co-work of native and Western physicians.

For two years and a half clinical instruction was given in the Bethesda Hospital and its dispensary. In 1912 the committee took over the Chang Yuk Women's Medical College which was then named the Kwong Yee Women's Medical School. Men and women were taught separately but mostly by the same faculty. After about six years of the instruction of women in medicine it seemed desirable to give up this school and in its place was established the Kwong Tung Training School for

Nurses. Almost as soon as the rented building was occupied the plans for a larger hospital were formulated, in 1909 a site on the river front in the city of Canton was purchased and in 1911 a hospital building with 60 beds was erected with accommodations for administration and staff and a chapel. Here was located for a number of years the Hospital Dispensary.

Late in 1912 the Government became interested and gave to the hospital a lot of 20 acres just outside the east gate of the city. Within the limits of this estate lie three hills on two of which have been erected the Hospital and School. In 1913 the Hospital purchased a number of small lots of land adjoining the larger one, perhaps two or three acres in extent. In February, 1914, the ground was broken for the erection of about one-third of the proposed plant. The school had been successful, so successful in fact that it was able to raise its standard and at this time only about half the applicants were accepted. Coöperative work had been well established and the students of the third and fourth year had access to the surgical clinics in the Can-

ton Hospital and to medical and surgical clinics in the Yan Tsai Hospital together with the Kung Yee itself. The latter was at this time full to overflowing with a total of 1,443 patients in the year. The Yan Tsai is a large native hospital and it gave over half its plant to be used by the Kung Yee staff. The house physician is a Kung Yee graduate with another as superintendent of nurses. The section of the hospital under the care of the Kung Yee staff had 123 patients and 2,865 dispensary calls. Thus far the receipts of the college had been about \$20,000 a year with a cash balance in 1915 of \$600. The receipts of the Hospital had averaged about \$40,000, with a cash balance in 1915 of \$10,500. Americans who have had experience in establishing institutions may well realize this fact, that in five or six years the college and school were able to secure from Chinese sources among Chinese people as important a maintenance fund as this. The number of patients had gone up to 1,450 in 1918 and the dispensary and city calls to nearly 9,000.

In 1916 and 1917 the new college and the Hospital, costing \$180,000 approxi-



A ward in the Kung Yee Hospital which tells its own story

mately, were erected, about one-third of the completed plannings. These buildings, occupying each one the top of one of the hills, are constructed to be the centers of important future additions. The Hospital, for example, has made its plans for five additional wings together with service and other buildings, while the Medical School is so situated as to provide for extensions in its building and for a convenient arrangement of dormitories about it. In the hollow between the two buildings lie the tennis courts and an athletic field of considerable area has been located far away from the street and entrance. The disposition of these structures crowning separate hills is picturesque and is assurance that no matter what may be the future growth of Canton in this direction, these buildings will never be overlooked or over-shadowed. The final plan will provide for 400 patients and 200 students.

Four buildings have already been erected. The Medical College has six well lighted laboratories, two lecture rooms and an assembly hall for 500 with administration, library and utility rooms. There is an anatomy building with laboratory for 80 students. The first section of the hospital building includes the general entrance, which will be an administration section with two wings, the administration building being continued to the rear with an extension to the West. As will be seen, the buildings are modern in style with spacious piazzas which may be open or glass enclosed at will, while the inner wing carries out the same feature with the balconies continued at right angles across the ends.

This first section of the Hospital contains 98 rooms, 34 for private room patients, and general wards accommodating 86 in 4, 8 or 12 bed units. There are here two operating rooms and all of the accessories. Nearby at the gateway is the Dispensary with six rooms for clinics, waiting rooms, library and administration.

It is interesting to notice that in the

construction of the buildings the floors and stairways are of reënforced concrete, the general structures being themselves of brick. For the anatomy building bamboo strips cross-laid constitute the reënforcement, a decided novelty to the American engineer, while in the other buildings steel and steel with bamboo are used. As to interior finish, the pictures give ample evidence of the modern equipment of these buildings with tiled floors and flush walls of white enamel.

With the opening of the new building, the hospital in the city was emptied. It was fitted up for dispensary and outpatient work, and will now serve for an emergency hospital as well as a health center with ambulance service connecting it with the new hospital. The new buildings were opened in 1918. The grounds have been given into the charge of an English woman, a trained horticulturist. The courses in the Medical School have been changed to a four and a five-year one. In 1918 it seemed best to discontinue the Women's Medical College, and in May, 1918, a training school for nurses was established which has furnished the women now in charge of the operating rooms and the director of the nursing staff of the Hospital.

An interesting outcome of the establishment of the Hospital outside the city



The roofs of the city of Canton. This will give to the Western world an idea of the congestion of population and to health officers it will suggest something of the sanitary problems to be met. Other public service agencies will be interested in the fact that the three high buildings are pawn shops.

limits in its effect on the psychology of the Chinese is that the patients are willing to go out of the city to a hospital which is quiet and clean, while it was difficult to persuade them to leave their homes for hospital treatment within the city walls. The number of patients treated in 1917 was 1,401; in 1918, 1,794, and in 1919, 2,434, with 30,000 days of residence. There were nearly 8,000 dispensary treatments, including about 300 calls or visits to home.

The illustrations furnished through the courtesy of Dr. Todd speak more than can words with reference to the quality and magnitude of this undertaking. The "Roofs of Canton" are of a great deal of interest to the health officer. Here the primeval thatch touches elbows with the corrugated iron, and all varieties of intermediate structure may here be observed. It gives a vivid suggestion of the congestion of population and to health officers it tells something of the problems that are to be met. The pictures of the interior of the hospital merit attention and the operating room with every individual in it a Chinese is deficient neither in quality nor personnel nor equipment, nor the attention of the student. No one could distinguish it from a similar room in this country. Here again is a ward in the Kung Yee Hospital which tells its own story, while, if one will examine in detail the faces of the hospital staff on the hospital steps, he

will be astonished to see so bright a corps of medical workers, a miracle wrought by a mere handful of Caucasian leaders.

And this modern Kung Yee Hospital stands in a land where on the street the rickshaw and the coolie porter hold sway and where the people have not changed their costumes or their customs these ten thousand years.



Operating amphitheatre with every individual in it Chinese. It offers means of comparison with similar rooms here.



The August-September NEWS LETTER, out September 5, will carry information about your railroad rates for the Fiftieth Annual Meeting of the Association in New York, November 8-18, 1921. You must have it to secure the special rate.

RELATIONS OF SOCIETY TO THE DRUG HABIT

PETER H. BRYCE, M.A., M.D.,

Ottawa, Canada

NO social problem has within recent years come into prominence with the same startling acuteness as that of drug addiction and the duty of the state towards it. The practices of peoples and individuals in the use of various intoxicating substances have an historical interest, reaching back to pre-Christian times, while the effects of drunkenness on the decline and fall of empires seems to have been always the occasion for homilies, when national prosperity has been associated with sudden accessions of wealth and social effeminacy. Belshazzar's feast, the orgies of Nero and the excesses of even the courts of the Caliphs, successors of the Nazarite Mohammed, whose precepts taught abstinence as a rule of life for the faithful, are but illustrations of what has marked the aberrations, whether of kings or nations, who have departed from the simple teachings of the sages of every age.

The growing complexity of modern society has, however, by what Professor T. H. Greene speaks of as "A series of sanctions," had to evolve rules of life, which we call laws, by which the liberty or freedom of the individual is limited in certain matters for the sake, as Greene puts it, of greater good to the individual as a member of the community. Such sanctions are the basis upon which all sumptuary laws, whether affecting health, morals or taxation, depend and their permanence will depend upon the judgment of popular opinion as to their utility.

Unfortunately, laws have not infrequently been passed during periods of national excitement or danger, which can scarcely be said to be based upon popular sanction, as where monarchy was restored after the excesses of the French Revolution, due to the fiction of the divine right of kings, and when in Spain the Inquisi-

tion was re-established, "To make the world safe from democracy." We have recently had illustrations of this kind of legislation as when the Russian Czar signed an ukase abolishing vodka-drinking, with the intent to make sober a people whose personal liberty was still a visionary thing. In the United States and Canada the legislatures of almost every state and province have passed prohibitory legislation to abolish the use of alcohol as a beverage and, contrary to the Russians in revolution, the people have again and again supported the legislation at the polls, basing their action on scientific or social grounds or on the religious beliefs of the individual voters.

The restrictions which have been conceded in the matter of alcohol have brought into prominence the dangers, which may arise to society from the use of opium, cocaine and other sedative drugs, which find a useful place in medicine. A century of history in America, during which few of these drugs were known, has taught that the relatively simple lives of the people were free from any intoxicant other than alcohol, whose disappearance as a beverage now has general sanction. This is the best evidence of a healthy national morale; while the prominence being given to drug addiction serves to bring into relief what may be best looked upon as a quickening of the public conscience in the matter of other degenerative influences affecting the national welfare.

Unfortunately, the mere votes of the people cannot determine biological questions such as underlie the neuroses of the higher class drug addicts in many cases, nor do they solve the problems, primarily moral and educational, of those on a lower plane.

A Western woman judge in her annual report of the Juvenile courts, sum-

marizes the situation based upon her experience: "I feel sure I am not exaggerating when I make the statement that in not one-third of the cases coming before me should the blame be attached to the delinquents themselves. Lack of parental control, misspent Sundays, late nights, community neglect, bad example of adults, old family grudges, cruelty of parents, poverty, immorality on the part of parents, drunken fathers and mothers, orphanage, bad environment, heredity, etc., bring most of the children to court."

It is with this phase of the situation that the subject of drug addition becomes distinctly a question of public health interest and importance. From the standpoint of the public health official the problem is presented as one for action, and envisaged as it is with biological, legal and social factors, he who would act wisely will act warily. *Festinate lente* is a maxim never in greater need of observance. It is, therefore, essential if we are to pass national or state laws and make health and police regulations dealing with drug addiction, that the matter be dealt with in all its bearings. Some would start with phylogenesis, and follow the persistence in races, as the Jewish, Latin, Nordic, or Mongol, of certain supposed tendencies based upon nervous organization, and by which some have explained hereditary alcoholism; but it is too complex a problem to separate tendencies from environment, such as occupation, residence, education and habits of life, valuable as each is as a factor, for the medical officer to obtain much assistance therefrom.

He knows from experience that the negro of the slums or other person of poor mentality must be largely the creature of his environment, with mental suggestion the more potent from lack of education, malnutrition, absence of regular occupation, and school discipline. Victor Hugo's Little Gavroche, the street gamin, with the activities of a young animal, is going to imitate all he sees,

taste every possible experience and graduate into some class, whether a future gunman or a down-and-out, the salvage of some holy agency such as the Salvation Army.

The addict of the higher type, often with a neurotic urban ancestry, is too frequently the over-worked, ill-paid clerk or the ambitious student, both wholly untaught as to the degree of resistance of a nervous system, or it is the pampered young woman of fashion, wholly irresponsible and the creature of impulse, because from a child she has been allowed to gratify every desire, who, exhausted through dissipations, social and sexual, seeks a *placebo* in some drug, and finding relief, logically becomes the victim of drug addiction. Probably no one will think the picture overdrawn or will find any difficulty in comprehending the remedy necessary in each class of case.

Not infrequently, too, as a result of medical treatment in which narcotic drugs were administered by a physician, individuals have become addicts, whose physical system seems to demand a regular supply of the drug. Such an one is not a "down-and-out"; he is not the irresponsible creature of impulse, but a man, unfortunate, and according to some authorities, sick and in need of medical treatment. He keeps on doing his duty in his profession, be it judicial, ministerial or financial, and presents a problem as difficult as it is painful.

But obviously we must not only seek to immunize against disease, but also must deal with existing cases. As to their number in any community, no person knows much. Attempted statistics from doctors, druggists, nurses and courts, give three to five per 1,000 of population, and as there are this number of insane in some communities, according to census returns, the number is probably not too high. Such must further be first known officially; but this will clearly be of little use unless some quite definite scheme for dealing with

them exists. How little progress would even then be made, may be judged from that made in dealing with venereal diseases, where the cases, causes and methods are all well understood.

The publicity method, used in New Orleans, seems to have been a successful means of discovering certain classes of addicts and of carrying them along, if not curing them. It lacks, however, scientific accuracy, fails in the personal touch of the social worker, and altogether lacks the intimate relations existing between physician and patient.

Naturally such activities lead up to the question of municipal provision for those who become incapacitated for work and who transgress social laws and police regulations or become dangerous to the public. Such may be dealt with under laws like the Inebriates' Act of Great Britain with good results, like those set forth in the report of Dr. Hogg, Superintendent of Dalrymple House to the Homes for Inebriates Association. Dr. Hogg has had long and successful experience and considers admission under the Inebriates' Act the best course for both patients and friends in most cases. Although private patients can end their stay at any time, those under the Act remain for the time for which they have been committed, unless previously discharged. Dr. Hogg says his object is to wean a man from his drug with as little discomfort as possible and it is stopped usually one or two days after admission. "Thereafter the object is to train the patient's mind to resist the morbid impulse by cultivating his self-control, strengthening his will power, and making him realize that part of his cure lies in his own hands." Dr. Hogg states that a considerable amount of freedom can be given some patients after a few days residence and parole after three or four weeks.

These extracts are of extreme importance since they at once raise the question of how is this self-control to be cultivated

in a man with a hereditary neurosis, or one a creature rather of impulse than educated in self-discipline. The writer recalls two patients, one a clever lawyer, another an eminent physician. Neither of these succeeded after more than ten years in becoming free, the one ending with self gas-asphyxiation and the other dying with chronic phthisis. Doubtless every physician of long experience will recall similar cases, and the problem becomes the more difficult when *habitués* are active citizens engaged in some useful work and, excepting through injury to themselves and anxiety to their families, seldom transgress the limits of social propriety.

To the psychologist such cases become of intense interest, though they are familiar to all psychopathologists. To comprehend the situation in any degree it is necessary to know "that every psychical activity rests upon the interchange of the material derived from sensation and from the memory upon associations, and that whereas, sensations vary but little from individual to individual yet variations in emotions are so great that we cannot agree upon what is normal and that which we call 'will' as the resultant of the centrifugal tendencies which lie within the elemental and complex psychical structures."

Advisedly then the dominant presentation at any moment in the mind of the drug addict will be that excited by, for instance, some external object such as a wine shop to the dipsomaniac, which calls up the associations of the last debauch, or by, as in the case of sexual stimuli or other organic activity, arousing subconscious ideas which automatically rise into consciousness and become 'will' determinants. Obviously, such are associated with disorders of circulation and secretion, where tissues are abnormal as in fever, or weakened reflexes through some disease, or through the use of drugs. Hence it would seem that the problem of dealing with drug addicts suc-

cessfully involves the most careful examination of the bio-chemistry of the blood and secretions to discover, if possible, pathological conditions which disturb the operations of a once normal *psyche*, while at the same time securing such temporary control of the patient as will enable the physician to prevent the effects of what must be looked upon as a temporary aberration.

Manifestly, this is easily possible when the patient is in a hospital or in the home in charge of a skilled physician or nurse; while it is equally plain that no mere routine of institutional repressive treatment will be adequate to overcome the effects of what is the result of years of secret addiction and it may be tissue changes. In this particular the situation is in no sense different from that where other psycho-neuroses are present, and the problem of how far any health department is at present equipped either with institutional facilities or trained psychiatrists involves the question of how far it is wise to load public health services

with yet one more, and that the most difficult official duty.

Obviously, however, since the general practitioner is seldom equipped with psycho-pathological experience or has hospital facilities adequate for pursuing such cases to a conclusion, and as few cities have a psychiatric institution where such cases can receive proper attention, the health department may be forced to take charge of such cases as are dealt with in the public courts. But no progress in the rational care of these cases can be expected until a much broader and more intelligent view is taken of what has produced the drug addict, of what his pernicious influence on society, if left at large, may be, and still more of the delicate problems of the rights and freedom of the individual, who is not bad but is weak and diseased. Nothing less than psychiatric hospitals and provision for conditional control of patients is likely to deal adequately in any degree with this the most distressing illustration of the difficult biological and moral problem of the *iter ad astra* of humanity.



Index of Health Papers. In connection with the assembling of national health organizations at 370 Seventh Avenue, New York City, the Common Service Committee has been organized. Its purpose is to undertake certain matters of all of the associations, including bookkeeping and mechanical work like the sending away of parcels and circulars. Its last service is that of a Weekly Library Index, the first of which appeared on the 24th of June.

This presents the titles and the periodical of publication of papers on General Public Health, Child Welfare, Health Insurance, Industrial Hygiene, Mental Hygiene, Nursing, Nutrition, Social Welfare, Tuberculosis and Venereal Disease, and other subjects

will undoubtedly be added when called for.

The associations will find here listed the important papers in official magazines throughout the country.

Five organizations are at present members of the Common Service Committee, the American Social Hygiene Association, the National Committee for Mental Hygiene, the National Health Council, the National Organization for Public Health Nursing, and the National Tuberculosis Association.

The Canadian Red Cross has for some time been issuing for the benefit of national associations across the line, a mimeographed bulletin containing a somewhat similar bibliography.

HAND DISINFECTION—AN INVESTIGATION OF VARIOUS PREPARATIONS FOR THIS PURPOSE

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THE therapeutic measure of controlling at least one method of transmitting contagious diseases, i. e., through the medium of direct carriers, who are represented by physicians and nurses in charge of such cases, consists of several important problems in public health measures. Among these prophylactic methods, that which has to do with the removal of the infectious virus from the carriers' hands is by no means the least. In an endeavor to solve this problem of hand disinfection and to be able to recommend a substance which will act thoroughly and possess all, or most all of the properties that such a disinfectant should have, the Pennsylvania Department of Health has conducted many experiments extending over the course of a year.

Before any experimental work was attempted, it was decided that the essential properties required of a hand disinfectant should be determined, and that tests to prove the efficacy of the preparation should be adopted. It was considered necessary, in order for a substance to have a value as a germicide for this use, that it must possess all of the following properties:

The product should be readily available; and either be on the market at present or placed on the market with little or no effort; be accessible in rural districts as well as in towns and cities; be already known by the medical profession and laity; and to have had some former use, whereby the public would be acquainted with its use and relative safety or dangers dependent thereon. The product should be very inexpensive, so that the cost would not make its use prohibitive. It should possess warning

signals, either natural or artificial, to indicate that it is not intended for consumption, and to prevent individuals from mistaking it for medicinal substances intended for internal use. And, in addition, to these danger signals it should be relatively free from toxic action, either from absorption through the skin or in case of accidental consumption. The preparation should be relatively stable in the original packet against time, climatic conditions and other physical agents with which it would come into contact during its passage from manufacturer to consumer. It should exert an almost instantaneous action when applied as a germicide, owing to the practice of attendants hastily washing the hands and the inability of individuals to estimate time, or their unwillingness to hold the hands long in an antiseptic solution. There must be an absolute lack of any production of irritation to the skin from repeated or continuous use of the antiseptic, and, notwithstanding all of the above properties it must not be unpleasant to use, because this property alone would suffice to prohibit the free and proper use of the preparation.

The tests employed to determine the efficacy of a hand disinfectant are based on the principle of simulating the actual conditions encountered in the therapeutic application of the material. This principle we consider to be essential in the development of any laboratory method for testing substances to be applied practically. In the case of sterilizing the hands after contact with contagious diseases the actual conditions to be simulated are numerous and can be divided into two classes: First—those that relate to the patient and carriers;—Second

—those that relate to the disinfectant. Under the former, must be considered the period of contact with the contagious individual, the organisms to replace the virus, and the value of these as test organisms. The latter includes the time and method of action of the material and the personal equation of the individual using it.

We decided that a period of three minutes would equal the average actual contact with the patient, including the handling of the patient and infected materials. We, therefore, adopted this length of time to immerse the hands in a basin containing one liter of a suspension of organisms. From previous experience* in testing the action of germicides by the use of *Staphylococcus aureus* and Diphtheroids as test organisms to supplant the etiologic organism concerned, we employed these in a dilution of ten billion of each type in a liter of tapwater to infect the test hands. This number of bacteria was adopted after experimentation to determine the quantity necessary to permit sufficient contamination of the hands. The organisms used are readily grown on agar, are more resistant to the action of germicides than many of the more infectious organisms, are comparatively free from the danger of severe infection when applied directly to the skin, and therefore constitute a good choice, especially in diseases the virus of which cannot be cultivated. At present we are attempting to establish the coefficient of resistance of organisms, using *Staph aureus* and Diphtheroids as the standard.

The length of time necessary for contact with the disinfectant must be brief, and, therefore, a period of one minute was selected. A short period is necessary owing to the usual practice of individuals exercising great haste, improper washing and the exhibition of a distaste for

such procedures. The average length of time required by individuals unaware of any experimental conditions, to wash the hands with soap and water and to dry them is 36.8 seconds. The time used by men is greater than that taken by women, for the former the average is 44.4 seconds and for the latter 29.2 seconds.

Therefore, in order to ensure destruction of the infectious organisms within such a short time the germicide must exert an almost instantaneous action. We have endeavored to obtain such a germicide, and have found it in the one which we recommend, since it will sterilize the surface of the hands in 15 seconds. We recommend a full minute, however, to ensure a washing sufficient for all surfaces.

The method which we employed to culture the hands is to infect the hands, then rub a cotton swab on wooden carrier, moistened in 1 cc. of sterile water, over the surface of the hands for the control culture. The bacteria are then rinsed from the swab in 1 cc. of sterile water, one swab being used for each hand, and the washings from both collected in the same tube. The infected hands are immersed directly into the liter of disinfectant for one minute. An orange-wood stick is used to cleanse beneath the nails. After this they are rinsed with sterile water which is poured on by an assistant and permitted to drain off. Again swabs are moistened with sterile water and rubbed over the hands, and sterile orange-wood sticks are used to culture beneath the nails. The washings from these swabs and sticks are collected in 1 cc. of sterile water. A control of the bacteria suspension is made by adding 0.1 cc of the suspension to 1 cc. of sterile water. A culture of the disinfecting solution is made by removing 0.1 cc. to 1 cc. of sterile water. After all cultures have been made, they are then plated in agar, by first pouring the 1 cc. containing the washings, etc. into individual Petri dishes and adding agar. They

*Standard Requirements and Methods of Testing Venereal Early Treatment Preparations—practiced by the Pennsylvania Department of Health.—Therapeutic Gazette, Dec. 15, 1920.

are incubated in an inverted position for 24 to 48 hours and the number of colonies is then determined. By this means it is comparatively easy to determine the number and nature of the colonies, spore formers being easy of recognition.

During the earlier stages of this work we attempted to first sterilize the hands before immersing them in the bacterial suspension, by means of bichloride of mercury, but abandoned the practice on account of the irritation produced leading to a misjudgment of the substance being tested and because we found it unnecessary since the number of organisms obtained after immersion of unsterilized hands is greater than after mercury sterilization due in all probability to the retention of mercury by the skin.

The method of washing the hands without the use of cloth or brush was selected, because the results were of equal value, and the elimination of other materials lessened the liability of transmission of the virus by inanimate carriers, and on account of the liability of the brush to produce mechanical injury to the skin.

The preparation of final choice and the one which we recommend most nearly to possess all of the above mentioned properties, and to guarantee disinfection of the surfaces of the hands, excluding that part under the nails, is a substance known as Eupad. This preparation has been known for some time, but has never been directly applied for the purpose of hand disinfection after contact with contagious diseases. It may not be amiss to re-state here the properties of this substance, and to mention factors which tend to prevent its usefulness.

Eupad is a dry hard powder, consisting of equal parts by weight of chloride of lime and boric acid ground to powder. It can be kept in paraffined paper envelopes without loss of chlorine content.

The mixture is comparatively inexpensive, possesses a natural danger signal in the characteristic odor. Both ingredients have been in use by the laity, and are easily obtained in any community. There is an absolute lack of any irritation. The boric acid present serves as a buffer against the caustic action of the chloride of lime. It is unnecessary to depend on complete solution to obtain germicidal action which is almost instantaneous. All experimental data will be given in Part II.

Eupad exhibits undesirable effects in but two of its properties. These are, first, the persistence on the hands of a slight odor of chlorine, and second, the toxic action of chlorine if taken internally. The odor can be removed almost entirely by rinsing the hands in either a weak solution of ammonia or vinegar (acetic acid). The toxic action is not as great in degree as that from other common disinfectants, amongst which are bi-chloride of mercury, the cresols, and carbolic acid. This property is guarded against by the container, and the character of the powder, the odor and taste of which would warn any individual of its unusual nature. In fact it seems impossible to obtain at present an efficient antiseptic without toxic action on internal administration in large doses.

The amount of preparation necessary to guarantee disinfection is 3 grams of the mixture added to 1 liter of water. These amounts can be approximated by adding one level teaspoonful of the powder to a quart of water. It is unnecessary to use other than tap water. The solution should not be employed for more than 30 contacts, nor be used after standing from two to three hours in an open vessel.

Owing to the action of chlorine on metals, the solution should not be placed in contact with vessels made from metal, but should be used in porcelain or enamel vessels.

The length of time required for disin-

*Lorrain Smith, Brennan, Rettie and Campbell, *British Med. Jour.*, July 24, 1915.

fection is but a few seconds, 15 being the shortest period tested and proven of value. We recommend, however, that the time of contact be one minute, this period being of sufficient length to permit thorough cleansing of all infected surfaces.

SUBSTANCES INVESTIGATED

The methods of applying disinfectants to the hands can be divided into two classes, first, the one whereby the individual remains in contact with the substance, and second, the one whereby the substance remains in contact with the individual. In considering the second method, it was thought to be valuable from the fact that the substance would be held in contact with the surface of the hands by means of an adhesive agent, thereby guaranteeing sufficient time for the germicide to exert the desired action. For this reason it would overcome the difficulty encountered in the first method, namely, the immersion of the hands for an insufficient period.

We, therefore, made many attempts to find such an adhesive agent free from properties incompatible with the action of the germicide, and lacking the objectionable feature of remaining sticky after application. The following were tested and discarded for one or more reasons.

A skin varnish containing 10 parts of casein, 35 parts of ammonia water, 10 parts of glycerine and 20 parts of water, was prepared but was found to have a persistent stickiness.

Emulsion petrolatum N. F., fl. ext. *grundelia* (drachm one to a pint of water), glycero-gelatinum N. F., lubricating jellies, glyceritum phenolis U. S. P. and glyceritum amyli U. S. P. were tested first, for their value as a varnish, but they were absorbed poorly or not at all, hence could not be used.

Various mixtures of gelatine and water, gelatine with glycerine and honey, oils and emulsifying agents and soaps with some inert base were made up into liquid applications and examined for

their practical use. Some were abandoned on account of their incompatibilities, while others, although compatible with the germicides, had to be eliminated on account of the prohibitive cost of their pharmaceutical manufacture.

Having found that it is impracticable to apply the method of keeping the disinfectant in contact with the individual we turned our attention to the method of second choice. The means of having the individual in contact with the disinfectant can be accomplished in two ways, first, by the use of a germicidal soap and, second, by immersion into a germicidal solution.

The former was thought to be more desirable on account of the greater convenience in the use of soap, which should be in itself germicidal and would, therefore, prevent direct transmission of organisms from carrier to carrier, require less space in the wash room and lack the feature of representing internal medicines, can be transported readily, and exert a cleansing action.

A number of soaps were selected so that each type of germicidal soap would be represented and were submitted to a test of their direct action on the organisms upon the hands. Observations were made for germicidal action and irritation produced. With the exception of a liquid soap containing HgI_2 in KI which was prepared in this Laboratory, and a mercuric iodide soap (1-1,000) purchased on the market, which gave variable results, all of these failed to destroy the bacteria within one minute. Irritation was either lacking or only slight in amount from the use of any except the mercuric iodide soaps, and these produced the conditions found after the use of bichloride of mercury, namely, roughening, drying and sometimes even cracking of the skin. Their use was discontinued before any actual dermatitis was set up. Soaps without disinfectants have been considered germicidal to a certain degree, and in fact to be able to entirely sterilize the surface of the skin. This, however, has

not been our experience, as we have found them to merely lower the number of bacteria and attribute this to the cleansing property, and not to the germicidal action of the OH group, or to the solution of lipoids of the bacteria.

Herewith is given in Table I, a condensed protocol of the experiments to demonstrate the action of these soaps. The individual records are omitted on account of a lack of space.

A fact noted in the use of these mercuric soaps obtained on the market is that greater germicidal activity is to be had from a fresh cake, than from one

which has been used several times. These soaps are useful for about 50 washings. The other soaps examined are without value as a germicidal application within a time limit of one minute.

The results of the experiments with skin varnishes and germicidal soaps proved these two methods to be without sufficient value, hence we turned to the last resort, the use of a solution in which the hands are to be immersed. We have grouped substances for this purpose according to the factor which renders it germicidal and have attempted to select one or more of each group which has a

Excluding the Nails		TABLE I							
Substance—	Organisms 20 bill. in 1000 cc. Staph. A., Dried	Period of Immersion	Period of Washing	Culture Control of Hands	Culture Treated Hands	Culture Water Used	Culture Bact. Susp.	Irritation from Continued Use	Value as Germicide
Sulphur soap	"	3 min.	1 min.	++++	++++	++++	++++	None	None
Cresol soap	"	"	3 min.	++++	++++	++++	++++	"	"
Tar soap	"	"	1 min.	++++	++++	++++	++++	"	"
Naphtha soap	"	"	"	++++	+	+	++++	"	"
Ordinary (Ivory)	"	"	5 min.	++++	+	+	++++	"	"
"	"	"	1 min.	++++	+	+	++++	"	"
"	"	"	5 min.	++++	+	+	++++	"	"
Flake (Lux)	"	"	5 min.	++++	+	+	++++	"	"
KI.—HgI ₂ 1-1000 Laby Liquid. Soap	"	"	1 min.	+++	—	+	+++	Moderate	Good
HgI ₂ NoKI Liquid Soap	"	"	"	+++	+	+	+++	None	None
Market HgI ₂ Soap No. 1.....	"	"	"	+++	+	+	+++	Slight	Fair
Market HgI ₂ Soap No. 2.....	"	"	"	+++	—	—	+++	"	Good
Market HgI ₂ Soap No. 1 after standing 6 months	"	"	"	+++	+++	+	+++	None	None
Market HgI ₂ Soap No. 2.....	"	"	"	+++	+	+	+++	Slight	Fair
Market HgI ₂ Soap No. 3.....	"	"	"	+++	+	+	+++	"	"
Market HgI ₂ Soap No. 3.....	"	"	"	+++	+	—	+++	None	None

— = no growth, + — = from 1-50 colonies per plate, + = 50-200 colonies, ++ = 200 = infinity +++ = infinite number of colonies per plate.

TABLE II									
Bacterial Suspension Equals 20 Billions of Organisms (Staphy. Aureus and Diphtheroids)									
Substance—	Amounts in 1000 cc.	Period of Immersion	Period of Washing	Culture Control of Hands	Culture Treated Hands	Culture Water Used	Culture Bact. Susp.	Irritation from Continued Use	Value
Pearson's Creolin	5 cc.	3 min.	1 min.	+++	++	+	+++	Marked	None
"	15 cc.	"	"	+++	+	+	+++	Very Marked	"
Lysol	5 cc.	"	"	+++	+	+	+++	Slight	"
"	15 cc.	"	"	+++	+	+	+++	Marked	"
Lig. Cresolis Comp.	5 cc.	"	"	+++	+	+	+++	None	"
"	15 cc.	"	"	+++	+	+	+++	Slight	"
Gly. Phenol.	15 cc.	"	"	+++	++	+	+++	None	"
Crude Phenol	5 cc.	"	"	+++	+	+	+++	Very Marked	"
Wescol	5 cc.	"	"	+++	+	+	+++	Marked	"

common use and is relatively inexpensive.

The germicidal action of the phenols and related groups has been attributed to the precipitation of albuminous material, but this is probably not the only factor concerned. It is more likely to be due to the chemical reaction of the phenols with aldehyde or amino groups within living protoplasm. However, we have not determined this point and have merely grouped members under phenols because as a class they are used for disinfectants.

A condensed tabulation of the examinations and results is given in Table II.

Preparations belonging to the phenol group are unsatisfactory because they are too slow in exerting lethal action. A concentration sufficient to destroy bacteria within one minute would be entirely too irritating. In fact all of these are capable of producing marked irritation if used many times even in weak concentration.

Other groups of antiseptics were ruled out without being subjected to trial. Among these are the dyes and the oxidizing agents. The former could not be employed on account of discoloration of the hands or fabrics. The latter, represented by potassium permanganate followed by oxalic acid, was ruled out on account of the process of manipulation being too extensive. Formaldehyde was considered undesirable on account of the danger of sensitization with subsequent production of a dermatitis.

One substance with high antiseptic properties is the hydrogen ion. In order to test this in common materials we selected sodium—acid—sulphate and vinegar. The former has been employed to sterilize drinking water, while the latter is in use in every household, both are easily obtained in any locality. Although they are non-irritating, they are not of value because the concentration of the

destroying agent is either insufficient or else the time required by it to exert lethal action is longer than the selected period of one minute.

Next we considered the use of dilute ammonia water, with the thought that it would be valuable from either the hydroxyl (OH) ion, which is known to be destructive as well as cleansing, or the NH^3 radical, which is deleterious to living protoplasm, probably through chemical union with aldehydes. This substance, however, failed to meet with all requirements.

The heavy metal group contains some of our most efficient germicides, which supposedly owe their action to the coagulation of albumin. Bichloride of mercury has an already established value, but is liable to produce irritation of the skin, and as we know from clinical experience, has in a number of cases been mistaken for medicine with serious and oftentimes fatal results. The closely related preparations, biniodide of mercury and mercuric iodide in potassium iodide solution, present the same dangers of irritation and toxicity and in addition are prohibitive from the standpoint of cost. In order to have a preparation belonging to the heavy metals and possessing more desirable features we examined copper sulphate.

This salt appeared to be nearly ideal in the possession of properties essential to a hand disinfectant and results of experiments demonstrate that it does possess most of the properties, but that it also has one serious drawback, namely, that organisms in the wash water are not destroyed within one minute.

Copper sulphate is inexpensive and known to most people as such or as blue stone or as blue vitriol; it can be obtained in any locality, and has many common uses. It has a blue color, and lends this color to a solution. If taken internally small doses would not be fatal and larger doses would act as an emetic, thereby preventing poisoning. Against

time, climate and other conditions it is remarkably stable.

Our experiments have shown that it will sterilize the hands in one minute, and that continued use will not cause any irritation of even very delicate skins.

Copper sulphate is unusual in exerting a germicidal action in low concentration when applied to skin, while the same and much greater strength solution will not destroy an equal number of bacteria in vitro. This fact led us to conduct many experiments to determine the reason for the strange behavior. At present we have drawn no conclusions, but hope to continue the work and possibly learn the secret of this activation of a comparatively poor germicide.

The property of destroying bacteria on hands was discovered when we subjected the chemical to the already mentioned test.

We had planned to determine the co-efficient of resistance of pathogens poor in resistance to laboratory conditions of growth, using *Staphylococcus aureus* and

Diphtheroids as the standard bacteria, and a solution of copper sulphate as the test solution. We therefore attempted to first determine the best concentration of the salt to use, by using different strengths of copper sulphate, controlled with 1:75 phenol, and the organisms mentioned above, according to the technique of the Pennsylvania Department of Health Laboratories,* in testing the action of prophylactics. In Table III are some of the records of these experiments:

It is readily seen that neither high nor low dilutions of copper sulphate will destroy the number of bacteria employed within one minute. In contrast to this is the action exerted when in contact with hands. Herewith is a table showing the results when copper sulphate 1:100 is used on hands for one minute. The hands in these cases were not previously immersed in a bacterial suspension.

*Standard Requirements and Methods of Testing Veneral Early Treatment Preparations—Practiced by the Penn. Department of Health. Therapeutic Gaz., Dec. 15, 1920.

TABLE III
Bacterial suspension made with water (1cc. = 2 billion organisms)

Substance—	Amt.	Bact. Susp.	1 min.	2 min.	3 min.	4 min.	5 min.	Controls
Phenol 1:75	1 cc.	0.1 cc.	+	—	—	—	—	—
Copper Sulphate 1:100	1 cc.	0.1 cc.	+++	++	+	+	+-	—
1:125	1 cc.	0.1 cc.	+++	+++	++	++	+	—
To determine if higher solutions will act								
1:175	1 cc.	0.1 cc.	+++	+++	++	++	++	+
1:500	1 cc.	0.1 cc.	+++	+++	+++	+++	++	—
1:750	1 cc.	0.1 cc.	+++	+++	+++	+++	+++	—
1:1000	1 cc.	0.1 cc.	+++	+++	+++	+++	+++	—
1:2000	1 cc.	0.1 cc.	+++	+++	+++	+++	+++	—

To determine the strength of copper sulphate necessary to kill 200 million organisms (0.1 cc. of usual suspension).

Substance—	Amt.	Bact. Susp.	Time 1 min.	Control	Bact. Susp.	Media Cont'l
Copper Sulphate—						
2 per cent	1 cc.	0.1 cc.	+++	—	+++	—
4 per cent	1 cc.	0.1 cc.	+++	—	+++	—
6 per cent	1 cc.	0.1 cc.	+++	—	+++	—
8 per cent	1 cc.	0.1 cc.	+++	—	+++	—
10 per cent	1 cc.	0.1 cc.	++	—	+++	—
12 per cent	1 cc.	0.1 cc.	+++	—	+++	—
14 per cent	1 cc.	0.1 cc.	++	—	+++	—
16 per cent	1 cc.	0.1 cc.	++	—	+++	—
18 per cent	1 cc.	0.1 cc.	++	—	+++	—
20 per cent	1 cc.	0.1 cc.	++	—	+++	—

TABLE IV

Name	Control of Hands	Hands not immersed in bacterial suspension Culture after Copper Sulp. 1 min. and 1 spore former		Culture Wash Water
		+++	+	
Dr. L.	+++	1 colony	1	++
Mr. G.	++	—	—	++
Dr. W.	++	—	—	++
Miss F.	++	—	—	++
Miss B.	++	—	—	++
Miss J.	++	—	—	++
Mrs. A.	++	—	—	++
Miss G.	+++	1 deep colony	1	++
Miss Gu.	++	1 deep colony	1	++
Hands immersed in bacterial suspension				
Dr. C.	+++	—	—	+
Dr. C.	+++	—	—	++

Results of these experiments show that the bacteria on the hands or those adhering to hands after voluntary contamination are destroyed within one minute, but the water containing the copper sulphate contained some organisms. The complete details of these experiments will be given in a later paper.

Having been unable to select an "ideal" antiseptic from any of the aforementioned groups we next examined the halogens. Iodine in potassium iodide solution was eliminated by the prohibitive cost. Bromine and fluorine compounds were not considered desirable on account of the cost and dangerous nature of the compounds. Chlorine was represented by a proprietary article "Nuklorene" and by chlorinated lime. The former is lacking in germicidal power, and difficult of solution. The chloride of lime was discarded on account of caustic action on the hands and the disagreeable odor.

We then attempted modification of chlorinated lime, or free chlorine, and prepared a chlorinated solution of gelatin

TABLE V

Substance—	Organisms 20 bil. in 1000 cc. Sta. and Droids	Period of Immersion	Period of Washing	Culture Control of Hands	Culture Treated Hands	Culture Water Used	Culture Bact. Susp.	Irritation	Value
Sta. B.—1000 cc. Nuklorene....	"	3 min.	1 min.	+++	++	+	+++	None	None
Chlorinated Lime	"	"	"	+++	—	—	+++	Marked	Too irritating
Chlorinated Gelatine	"	"	"	+++	++	+	+++	None	None
3 gm. 1000 cc. Eupad.....	"	"	"	+++	—	—	+++	None	Good

In Table VI are presented the results when various quantities and periods of time are used.

TABLE VI

Excluding under the nails	Eupad—	20 Bil. 1000 cc.	Period of Immersion	Period of Washing	Culture Control of Hands	Culture Treated Hands	Culture Water Used	Culture Bact.	Irritation	Fresh Solution
1 gm.-1000 cc.	"	3 min.	1 min.	+++	++	+	+++	None	"	"
2 gm.-1000 cc.	"	"	"	+++	++	—	+++	None	"	"
3 gm.-1000 cc.	"	"	"	+++	—	—	+++	None	"	"
4 gm.-1000 cc.	"	"	"	+++	—	—	+++	None	"	"
3 gm.-1000 cc.	"	"	45 sec.	+++	—	—	+++	"	"	"
3 gm.-1000 cc.	"	"	30 "	+++	—	—	+++	"	"	"
3 gm.-1000 cc.	"	"	15 "	+++	—	—	+++	"	"	"
3 gm.-1000 cc.	"	"	1 min.	+++	—	—	+++	"	"	"
3 gm.-1000 cc.	"	"	"	+++	—	—	+++	"	After standing 1/2 hour	"
3 gm.-1000 cc.	"	"	"	+++	++	++	+++	None	After standing 2 hours	"
3 gm.-1000 cc.	"	"	"	+++	++	++	+++	None	After standing 4 hours	"
3 gm.-1000 cc.	"	"	"	+++	++	++	+++	None	After standing 24 hours	"
3 gm.-1000 cc.	"	"	"	+++	—	—	+++	None	After 5 washings	"
3 gm.-1000 cc.	"	"	"	+++	+	+	+++	None	After 25 washings	"
3 gm.-1000 cc.	"	"	"	+++	+	+	+++	"	After 40 washings	"
3 gm.-1000 cc.	"	"	"	+++	—	—	+++	"	Held in envelope 3 weeks	"

tine. This solution lacks sufficient germicidal activity. The other modification examined is Eupad, a mixture of equal parts by weight of chlorinated lime and boric acid. The properties and use of this compound have already been given. It may be of interest to insert here a condensed tabulation of some of the results of experiments.

The results of these experiments show that Eupad is capable of exerting germicidal action within a period of 15 seconds, and is valuable for at least 25-30 washings, and can be exposed in solution in an open vessel for two hours or more without loss of action. It can be kept in envelopes which are coated with paraffin, without loss of chlorine content.

The relative cost of the various preparations is of considerable importance, the especially manufactured preparations being very expensive. A few figures for comparison are Bichloride of Mercury, \$2.10 a pound, Mercuric Iodide, \$5.15 a pound, Nuklorene, \$1.00 a bottle of 100

tablets, Copper Sulphate .20 a pound, Chloride of Lime, .15 a pound, Boric Acid, .30 a pound. The amount of each of the latter necessary is 1.5 grams, thus making a comparatively low figure for this preparation.

SUMMARY:

1. Eupad, a mixture of equal parts of boric acid and chlorinated lime, is recommended as a substance to be employed in the strength of 3 grams (1 teaspoonful) to 1000 cc. (1 qt. of water) for disinfecting the hands after contact with contagious diseases.

2. The properties required of such a preparation, and the essential principles on which the tests are based are described in detail.

3. The substances are grouped according to the element or radical which is credited with the germicidal action.

4. Condensed tables showing the action of Eupad and other substances examined are included.



RAILROAD RATES

A special rate of one-and-a-half fares for the round trip will be in effect for the Annual Meeting, except from New England states. For Pacific Coast cities the rates will be the regular winter round-trip rates, which are somewhat lower than the rates made on the one-and-a-half fare basis.

Be on the lookout for the joint number of the August and September NEWS LETTER for detailed rates.

This number of the NEWS LETTER will also contain a coupon on which a request may be made for the identification certificate which will entitle you to the reduced rates. Reduced rates can not be obtained without this certificate.

MEASURING RODS OF MORTALITY RATES

DWIGHT M. LEWIS, M.D.,

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Determination of constant factors is of fundamental importance in vital statistics. Possibilities of measuring the role of filth-borne and respiratory diseases in crude death rates are here shown. The relative values of the constants of these two types of disease offer food for thought in preventive health administration.

THE accuracy of the fact that two types of disease, namely, filth-borne and respiratory, are epidemiologically the large factors in the possible reduction of mortality rates, all causes, should be reflected in the possibility of their being measured as constituent parts of the total mortality rate. I have recently shown it possible to figure rather accurately the infant mortality rate by estimating the sum of three factors; namely, the bed rock irreducible of the first month of life, plus the infant diarrhea mortality rate under age 1 multiplied by a constant 1.23, plus the respiratory rate under age 1 multiplied by the constant 2.3.* A study of the vital statistics of the Bureau of the Census for the years 1911-1917, inclusive, giving the rates for the total registration area and its component parts, show that our premise is correct. Allowing a figure 5.5 for an irreducible mortality rate per 1,000 population composed of other diseases than the two types mentioned, using the figure .06 as the constant for the filth-borne diseases and the figure 2.6 for that for the respiratory diseases, I find as nearly a satisfactory correlation of the estimated and the actual mortality rates as for the infant mortality rate. The following table shows the actual yearly mortality rate and that estimated one ac-

quired by multiplying the sum of the rates for typhoid and infant diarrhea by .06, plus the sum of the rates for measles, whooping cough, influenza, pulmonary tuberculosis, bronchitis and total pneumonias by 2.6, plus the irreducible figure 5.5.

Section of U. S. A.	Year	Actual Rate	Estimated Rate
Total registration area.....	1915	13.502	13.378
Cities in registration states.....	1915	14.197	14.280
Rural area of registration states	1915	12.344	12.453
California	1915	13.799	13.276
San Francisco	1915	15.921	14.373
Connecticut	1915	14.937	14.297
Bridgeport	1915	15.426	15.402
New Haven	1915	15.71	14.334
Massachusetts	1915	14.334	14.075
Boston	1915	16.131	15.880
Minnesota	1915	11.150	12.039
Minneapolis	1915	11.452	12.222
New York	1915	14.312	15.437
New York City.....	1915	13.943	16.138
North Carolina	1915	19.661	17.397
Pennsylvania	1915	14.876	14.535
Philadelphia	1915	15.615	15.719
Total registration area.....	1916	13.989	13.997
Cities in registration area.....	1916	14.992	14.862
Rural area of registration states	1916	12.877	13.165
California	1916	13.536	12.895
San Francisco	1916	15.434	13.823
Connecticut	1916	16.688	16.451
Bridgeport	1916	19.362	19.654
New Haven	1915	15.711	14.334
Massachusetts	1916	15.069	14.816
Boston	1916	16.872	16.166
Minnesota	1916	12.064	12.172
Minneapolis	1916	12.414	12.632
New York	1916	14.485	15.071
New York City.....	1916	13.914	15.407
North Carolina	1916	19.034	18.036
Total registration area.....	1917	14.165	14.274
Cities in registration states.....	1917	15.151	15.046
Rural areas of registration states	1917	12.979	11.776
California	1917	13.602	13.135
San Francisco	1917	15.040	13.724
Connecticut	1917	17.065	16.479
Bridgeport	1917	18.200	18.696
New Haven	1917	17.094	16.319
Massachusetts	1917	14.913	14.388
Boston	1917	16.546	15.941
Minnesota	1917	11.737	12.079

*D. M. Lewis, Measuring Rods of Infant Mortality Rates. A. J. P. H., August, 1921.

Section of U. S. A	Year	Actual Rate	Estimated Rate
Minneapolis	1917	11.817	12.137
New York	1917	14.389	15.276
New York City	1917	13.685	15.351
North Carolina	1917	20.742	19.902

The very general agreement of rates in this sampling of total registration area, its component parts of cities and rural areas, and of such states and cities of those states as represent the varied types of completeness or otherwise of registration, of relating variations of infectious diseases, is the more satisfactory when consideration should be taken of the caution of the Census Bureau as to errors of estimated population. There are outstanding the following discrepancies: North Carolina shows for each of the three years a much lower estimated rate than the actual. The records show that this state of all the above sampled, alone shows a sufficiently high excess of ill-defined causes as would in terms of other states or cities, correct and bring up the estimated figure, were the excess content brought into the two groups of diseases. San Francisco alone of the cities shows a much lower estimated rate; the records show that alone of the cities, San Francisco has a suicide rate of upwards of one-half excess over the state for 1917 and three times as much for 1916, while there is no excess in 1915. Inasmuch as the variation of each year of the estimated over the actual recorded is the same, it may be possible that the discrepancy is one of estimation of population. The possibility of checking up excesses of violent deaths and suicides and ill-defined or all other defined diseases as possibly belonging to the respiratory group is well seen in the following instance: Framingham, Mass., for 1917 had a recorded death rate of 16.185; the estimated rate would be 12.138. Should the excess of violent deaths, suicides and other defined diseases which alone exceed markedly the figures for the state, which excess amounts to 1.12, be placed as respiratory in view of the absence of any typhoid and added to the respiratory rate there would be an estimated rate of 15.830, agreeing

closely with the actual rate. The last discrepancy is a most interesting one: Alone of all cities, New York City for each year is notable for a much less actual recorded rate than the estimated; according to the census reports it is as well the only city which has lower actual rates than those for the state. The estimated rates on the other hand, in agreement with all other cities, shows a higher rate for the city than the state. Inasmuch as there does not present in the summaries of the specific parts of the mortality rates each year any marked diminution of rates for the city over the state, it would seem that the error lies in an excessive estimated population for the city. The possibility that the rock bottom figure of 5.5 has been affected, alone of all the larger cities, is tenable and if so proven would make comparisons of the recorded and estimated total mortality yet more significant. The possibility of the origin of excesses of abridged International list No. 37 is rather remarkably shown in the following instance: Ann Arbor, Michigan, for 1917 presents a rate of 31.913; the estimated rate would be 16.604. The statistics show an excess of No. 37, all other defined diseases, of 5.000 and one of .874 for violent deaths and suicides over those of the state. When the figure 5.874 is brought into estimated group as a part of the respiratory disease and so correlated, the estimated rate is 31.877.

Like Pasteur, I have felt for years that there must be laws controlling Nature's methods. Unavailing have been innumerable attempts to correlate by constants and all combinations of classes of diseases, crude death rates, until a possible way was shown after the method of that recently shown for the infant mortality rate.

In sum, there would seem possible, measuring rods of mortality rates, all causes. Two of these, that of filth-borne and that of respiratory diseases, would seem of great value not only in checking up comparative amounts of such pre-

ventable diseases, but of demonstrating where unusual excesses of other recorded constituent parts of the total rate belong, and lastly, failing the fact that errors of

estimated population are involved, of showing that there are other measuring rods bound up in the figure used as an irreducible.



BOYS' HEALTH PAGEANT

Unique in many of its features was the Health Section of the Boys' Loyalty Parade in New York City on April 30, 1921. It was with a beaming smile and a righteous purpose that old Milk Bottle strode down Fifth Avenue on that occasion, inscribed with the legend "At Least a Pint of Milk a Day" and driving before him the beverages which he should replace, Tea and Coffee, represented by their conventional receptacles.

height, that factor which has recently come so strongly into public health work for the child, and which is food for thought.

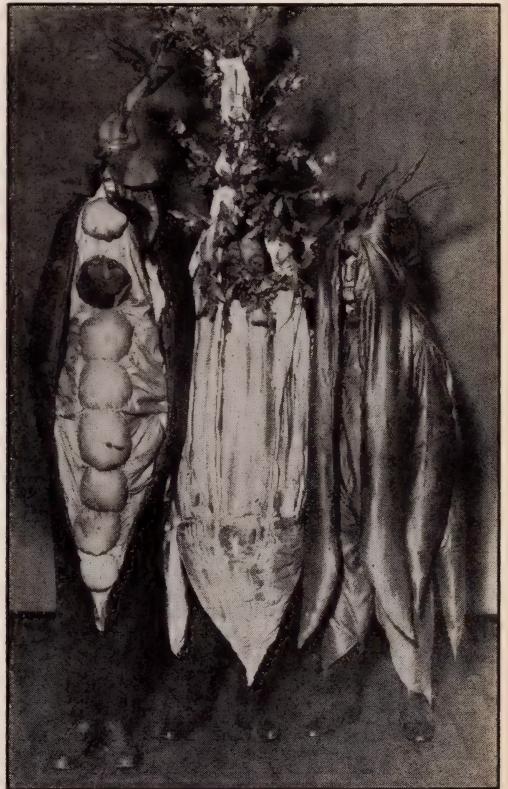
Oatmeal and Double Boiler, Brown Bread and Glass O' Water preceded the line of green vegetables. Of these, Charlie Carrot was the central figure. Bill Beet,



In eager conference Bill Beet, Robert Spring Onion and Charlie Carrot plan to invade the diet of childhood.

Surrounded by all the child health essentials, Mr. Milk Bottle had a march of triumph, and there is everywhere in the Metropolis indication that the lesson he taught was learned joyfully by the amused populace.

Judge Scales in cap and wig was an imposing figure with his sheriffs bearing large signs, "What a Boy Should Weigh," and "Weight for Height," and "What is Yours?" flanking his advance. These gave to everyone the relations of weight and



Henry Pea, Tom Celery and Samuel Bean show a solid front for good health habits.

Robert Onion, Henry Bean, Samuel Pea, Patrick Spinach and Tom Celery marched beside him, while Orange, Apple and Egg made an amusing trio.

There was a line of health habits, in

which Soap and Tooth Brush marched beside the Boy-in-Bathtub. The application



Jovial Old Milk Bottle has banished from Health-land Tea and Coffee thieves of Child Health.

of these was evident to everyone and was loudly applauded. Sleeping-Long-Hours-with-Windows-Open, a Boy in pajamas walking in a window frame, finished the pageant.

This popular presentation in a parade was one of the many bright ideas originating with the Child Health Organization. From the very beginning, when it initiated its happy, care-free, child health trademark, as it might be called, the Association has had a succession of bright ideas in methods of interesting children in acquiring health habits. In this procession, it unquestionably scored again.

Health Ambassadors.—In an interview with a correspondent of the Washington Star, Brig. Gen. C. E. Sawyer, the president's personal physician proposes that this country send envoys of health to South American countries. Gen. Sawyer is quoted as follows:

"I hope to see a public health service that will send a man into every country in South America, where they will serve the dual purpose of making those countries safe places for Americans to live in, and at the same time help the South American to put into practice what we have learned in sanitation and care of the public health.

"In South America, Central America and Mexico there lies an immense field for our commercial development. But before we can trade with the South American, we must win his confidence, establish a relationship that will assure him we want his good will as well as his trade. The United States has made more progress in sanitation than any country in the world, and the American doctor has a great opportunity to educate his South American neighbor in

what he has learned along these lines."—Ben. McKelway, *Washington Star*, April 24, 1921. (J. A. T.)



Popular Health Magazine in Yugoslavia.

—A popular monthly health review published by the Ministry of Public Health of Yugoslavia in collaboration with the Nation Public Health Association, a voluntary agency with headquarters in Belgrade, has a circulation of 100,000 according to a writer in the March-April 1921 Bulletin of the League of Red Cross Societies. Besides this magazine many other kinds of health education and propaganda are carried on. The sum used for the teaching of hygiene is 3 per cent of the budget of the Ministry and amounts to more than two millions of dinars (a dinar is 19½ cents). Books, posters, and moving pictures are used, and schools for teaching hygiene have been established in six communities. The Ministry also coöperates with the Temperance Association.—Dr. A. Stamper in March-April, 1921, *Bulletin; League of Red Cross Societies*. (J. A. T.)

The NEWS LETTER for August, combined with that for September, is due from the press on September 5, and will have information of value about the hotel rates for the Fiftieth Annual Meeting of the Association. Also facts about the Health Institute. Watch for it.

INDUSTRIAL APPLICATION OF ARMY AND NAVY VENEREAL DISEASE RECORDS

RAY H. EVERETT AND MARY AUGUSTA CLARK

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Venereal diseases are a much greater handicap in industry than existing industrial statistics indicate. This inference may properly be drawn from the 1920 reports of absences from duty in Army and Navy. In the former more than 13% and in the latter 15% of all absences were from venereal diseases.

“FOR personal reasons” is a heading under which many industrial physicians enter that important percentage of absentees for whom no more definite diagnosis can be made. The student of industrial disabilities mourns the scarcity of statistics; so do the men who are responsible for the health of employees, but they admit their inability to rend this “personal reason” veil.

But few plants maintain records of specific causes of disability among employees and resort to other sources has been generally without avail. For instance the U. S. Public Health Service in an attempt to study this problem found it necessary to utilize records of sick benefit organizations of employees as a source for data.¹ Records of this character do not furnish a complete, impartial picture of the amount of sickness in any general industrial group because, being membership organizations, they include only a selected group of persons, and because they discriminate against certain disabilities, refusing to pay benefits for them. These records are particularly inadequate with respect to the venereal diseases because “sick benefits are denied for a venereal disease.”

As a general thing it may be said that venereal diseases are the stepchildren in the industrial statistics family. Few if any of the usual aids toward accurate adjudgment and computation are present

in the majority of cases of venereally infected workers in industry. That may be why a tabulation of the records of a rubber company employing 18,000 persons during the year ending October 31, 1920, showed but two cases of syphilis and six cases of gonorrhea per 1,000 male employees.¹ Other diseases were reported with far greater frequency, there being 196 cases of “excessive colds” and 279 cases of “all diseases of the respiratory system,” whereas the venereal diseases accounted for less than one-half of one percent of all sicknesses reported during the year. This was in an industry whose records are considered among the best, where real thought and effort have been expended in an endeavor to check industrial disability. Hence it is patent that we must go to other than industrial sources for authentic indications of disability resulting from venereal diseases.

Army and Navy statistics are of interest and value in this regard because adequate reports are available of health conditions in these two large groups of men, reports which include records kept of admissions to sick report for all sicknesses including the venereal diseases. Investigations and inspections are made to detect conditions which the men might fail to report with special reference to detecting venereal diseases. Therefore it is possible to study these diseases

in the Service as it is not possible in industry.

The 1920 reports of the Surgeon Generals of the Army² and the Navy³ giving figures for the calendar year 1919 are the latest and in many respects the best for this purpose. This is especially true of the Army report since more disability than usual was detected in 1919 because of the thorough physical examinations given the men preceding demobilization. "Personal reasons" were not considered sufficient explanations, as it is possible, of course, in the Army to compel examinations. Hence, during 1919 a total of 26,815 venereal disease infections were reported among enlisted men in the United States, 6,557 cases of syphilis, 16,246 cases of gonorrhea, and 4,012 of chancroid. Since the average strength of this portion of the Army was 306,963 men this gives an annual rate for the venereal disease group of 87.36 per 1,000 mean strength—a rate more than ten times as great as that of 8 per 1,000 reported among employes of the rubber plant.

Among these 306,963 Army men venereal diseases accounted for 11% of all cases of sickness reported, ranking as the most important cause for sickness. Here is a great contrast to the "less than one-half of one percent" shown in the records of the rubber company. Even though many of the essential mutual factors for making a true comparison are lacking, there is at least an indication that a greater number of male industrial employes are infected with a venereal disease than present industrial statistics show.

Figures of the Army and Navy are not directly comparable, since those quoted on the former show conditions only among soldiers stationed in the United States, whereas the Navy figures report conditions in the entire Navy including officers and persons in all occupations in the Navy service, clerks, mechanics, culinary workers, etc. They

also include men stationed in all parts of the world.

In the Navy tabulation of various occupational groups wide and sometimes startling differences are shown in infection rates. There might be grounds for anticipating the rate of one per 1,000 among midshipmen, the lowest figure given, but who would expect to find the highest rate, 300 per 1,000, among culinary workers? A total of 33,350 cases of venereal disease was reported for the entire Navy during 1919, divided as follows: 4,920 syphilis, 20,411 gonorrhea, and 8,019 chancroid. Since the average complement was 298,774 this gives an annual rate of 111.62 per 1,000—almost fourteen times as high as the 8 per 1,000 mentioned in the records of the rubber company.

That the Eighteenth Amendment and the successful nation-wide fight against commercial prostitution have been important factors in the reduction of venereal disease rates is also indicated by Navy reports. Navy Medical Bulletin 105 (April 15, 1921)⁴ states in an opening paragraph, "Shore liberty for a considerable proportion of the men of the Navy in foreign ports where foreign language was spoken and where alcoholic beverages could be obtained without limit was followed, as predicted, by an increase in the incidence of venereal disease."

In an analysis of 340 annual sanitary reports for 1920 made to determine why the incidence rate was higher on some ships than on others the cause most frequently mentioned as being responsible for high rates was the prevalence of commercial prostitution, particularly of the "segregated district" type, in the ports visited or, in the case of shore stations, within the liberty area.

Ships spending a greater part of the year in foreign ports almost invariably reported a very high incidence of infection, as illustrated by the rates per 1,000 of complement per annum for the following ships: U. S. S. Chattanooga, 650;

U. S. S. Scorpion, 663; U. S. S. Galveston, 548; U. S. S. Pittsburgh, 396; and U. S. S. Helena, 455. Ships visiting only ports in the United States or ports where prostitution was not practiced openly all showed lower rates of infection, says the bulletin, citing as an example the U. S. S. Oklahoma with a rate of about 62 per 1,000 of complement per annum.

The medical officers apparently anticipated the greater incidence of venereal disease when visiting foreign ports, for such statements as follow were frequently noted in their comments on high rates:

A very good record inasmuch as the vessel was in foreign ports most of the time.

The venereal disease rate has been very high in spite of every effort to control it. This is due to the fact that the ship was stationed at Constantinople during the first half of the year.

The number of venereal diseases contracted by the crew was very low, taking into consideration the great number of Chinese women who were infected.

As a result of conditions ashore in China, venereal disease rates were very high.

Over half the admissions for the year have been for venereal diseases. This has been due to the prevalence of prostitution in practically all of the ports visited.

This high rate is not excessive, as prostitution exists in all foreign ports.

The high incidence of venereal disease is believed to be due to (1) the prevalence of prostitution in China, (2) the youth and inexperience of the men.

When prostitution was suppressed in the vicinity of shore stations lower rates followed as shown by the following extracts:

The venereal disease situation shows a marked improvement, there being no admissions for venereal disease on this station (naval station, Cavite), the U. S. S. Genesee or the U. S. S. Piscataqua during the month of December. The decrease in admissions for venereal disease during the past year is probably due to the fact that houses of prostitution in the vicinity of San Roque and Cavite have been closed.

Numerous diseased prostitutes in Pensacola, Florida, were incarcerated and their brothels closed. This action had a marked effect upon the venereal situation, reducing the number of venereal admissions on the station (naval station, Pensacola, Fla.) from approximately 30 per month to a minimum of 3 per month.

A constant effort is being made by the local sanitary department to control clandestine prostitution; as a result, the venereal disease admission rates have been lowered. (Marine Barracks, St. Thomas, Virgin Islands.)

The value of educational measures was variously estimated. The following statements noting beneficial effects are quoted:

The crew of this vessel has received special instructions in personal hygiene and venereal prophylaxis during the year. A gradual though noticeable decrease in the number of exposures resulted. It is the opinion of the medical officer that personal talks with the men, with special reference to the complications that may occur if infected, is far more efficacious than the distribution of pamphlets and posters.

It is believed that the low admission rate for venereal diseases may be attributed to educational propaganda and restriction of the sale of alcoholic beverages.

The fleet surgeon conducted an energetic campaign which materially checked the spread of venereal infections, particularly while the fleet was in Bremerton.

Reports from the 13th naval district, the navy yard at Portsmouth, N. H., and from the U. S. S. Rappahannock stated that the work of the Interdepartmental Social Hygiene Board had been especially valuable in benefiting social conditions in the neighborhood of the stations, and thus reducing the number of exposures.

The three diseases most frequently reported by the navy in the report of 1920 were tonsillitis with 20,908 cases, gonorrhea with 20,411 cases, and influenza with 20,366 cases. Thus it will be noted that gonorrhea was more common than any other disease except tonsillitis. The incidence of influenza was unusual as was the case in 1917 and 1918 when this

disease was responsible for so much disability.

Perhaps the most important figures to industry are those relating to the extent of disability due to venereal disease, and the Army and Navy reports both give valuable data in this regard. Infected individuals in both services are required to take treatment, thereby causing, in all probability, more immediate absence from duty than would occur in an industrial group where treatment is voluntary. On the other hand chronic gonorrheal conditions and latent syphilis are more liable to occur in industrial workers and the resulting losses in time, money, and suffering are inestimable.

The number of sick days occasioned by venereal diseases in the Army and Navy is very high and figures of total time lost would be even higher save for the fact that no record is, or can be, kept of the minor disability suffered by those who are not seriously enough ill to lose entire days.

The report of the Army shows a loss from duty of 871,533 days in 1919 because of these diseases among enlisted men in the United States. The average daily absence was 7.78 men per 1,000. In the entire Navy during the same year 558,421 sick days were attributed to the venereal diseases, accounting for a daily average of 1,533 individuals absent from duty. Over 13% of all absences in the Army and 15% in the Navy on account of sickness were occasioned by this disease group. They rank second in both services as causes for absence, being preceded only by tuberculosis in the Army and the influenza-pneumonia group in the Navy. Gonorrhea by itself ranks second in importance in the Army, syphilis coming in seventh place.

The following extract from a previous article⁵ deals briefly with one handicap under which the Army labored during the war period in its effort to develop and maintain an efficient fighting machine:

Of the 967,486 men in the group known

as the "second million," there were 54,843, or 5.6%, infected with a venereal disease. The annual report of the Surgeon General of the Army for 1919, in comparing these figures with those for the first 500,000 and first million says, **"It is probable that the figures for the second million of 5.6 percent showed more clearly the correct percentage of the drafted men from civil life who were infected."** During the year 1917, gonorrhea was the commonest cause of admission to sick report among soldiers in the United States and in 1918 was second only to influenza. In 1918 syphilis, gonorrhea, and chancroid together were second only to influenza in number of admissions, exceeding by 87,871 admissions bronchitis, the next most frequent cause. Hence, it is evident that, with the exception of the unusual epidemic of influenza which prevailed in 1918, venereal infection was the greatest cause of disability in the army during the world war.

An interesting statement regarding the cost of venereal diseases to the Army appears in a letter written by the chief of the Division of Sanitation Office.⁶ "It may be conservatively estimated, however, that the actual loss to the Army caused by the venereal diseases during 1919 was not less than \$15,000,000," says the officer. This estimate does not take into account what the infected soldier lost through reduced pay.

Since no one is more ready to admit the inadequacy of industrial statistics on venereal disease than those who would profit most by them, the main purpose of this study is to give public health workers and industrial physicians the most available and comparable figures. Then they can at least realize that these diseases must have a considerable bearing on industrial disability even though they cannot approximate the extent of its responsibility. The problem is there, though its terms cannot be exactly defined as yet.

A recent interrogatory addressed to 63 physicians and surgeons in charge of large industrial medical organizations brought forth many opinions and suggestions relative to the subject. The question, "Could

a thorough-going, scientific study of the many-sided problem of the relation of venereal diseases to industry be made?" was answered in the affirmative by three out of four of those who considered it. The same proportion agreed that such a study should be made.

To the query, "How should it be made?" the answers divided into four recommendations. The first advocated educational work, especially among owners, boards of directors, managers, and executives to rouse their direct interest in such a study; the second suggested more comprehensive questionnaires; the third was for "an investigation of conditions in one thoroughly organized corporation"; the fourth would await "further development of medical service in industry" before undertaking the study.

On the question of whether an outside agency should make the study, a real division of opinion exists. The chief surgeon of one industry says, "The industrial physician is working out this problem slowly and sanely. Leave him alone. The medical chief of another industry, who favors an outside agency investigation, claims "There is a great opportunity for a good piece of work in this line." Practically all of the answers agree, however, with the sentiment ex-

pressed in the following extract: "Venereal disease is essentially a community problem and unless the community is actively interested little will be accomplished. Industry can only assist in solving the problem and that it is willing to do."

There is certainly a flash of silver in the industrial statistical clouds, a flash furnished by the continued and thoughtful consideration which the medical men of industry are giving to the many causes underlying that baffling "for-personal-reasons" heading.

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JUBILEE HISTORICAL VOLUME

To commemorate the fiftieth anniversary of the establishment of the American Public Health Association, a jubilee historical volume entitled *Fifty Years of Public Health* will be published shortly before September 30, 1921. It will be in the form of seventeen historical essays on various aspects of public health work, written by as many leaders of public health thought in the United States. Members of the Association will be able to obtain the book at cost (\$2.00, paper; \$3.00, cloth) provided they order before publication. Non-members and all ordering after date of publication will pay \$3.00 and \$4.00 for the same volume.

On page vi of the front advertising section in this issue of the JOURNAL will be found a table of contents and a coupon which members may use for ordering. Fill it out and mail now!

INFLUENCE OF PEPTONE ON INDOL FORMATION BY *BACILLUS COLI*

F. W. TILLEY, M.D.,

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Washington, D. C.

"Of the making of peptone in varieties there is no end," might be the summing up of this paper. The author shows that the different kinds may give negative, weak or strong reactions for indol with a typical strain of *B. coli*. He suggests testing every lot of peptone, but the principle is evident, that this important product needs standardization.

ALTHOUGH the indol test is widely used in the differentiation of bacterial species, a search of the literature shows that almost no attention has been paid to the possible influence of different peptones on the formation of indol. Gorini¹ discusses in a general way the influence of the quality of peptones on bacterial metabolism, merely mentioning among other things that a culture of *B. coli* had produced indol with Witte's peptone and had failed to produce indol with an Italian peptone. Porcher and Panisset² describe an experiment in which the indol-producing power of four different peptones was tested with the same culture of *B. coli*, the results showing considerable difference between them. Aside from these two articles, the writer has failed to find any mention of the influence of peptone on indol formation by *B. coli*.

It seemed, therefore, worth while to inquire into the matter with special reference to peptones available in this country, and the work herein described was undertaken, using six different varieties of peptone and in general, several different samples of each different variety.

EXPERIMENTAL WORK

The various samples of peptone were first of all tested for the presence of

tryptophan. One percent solutions were employed and these were tested by the following methods: Bromination, the paradimethylamidobenzaldehyd test and the glyoxylic-acid test.

The bromine test was performed by adding bromine water to the peptone solution drop by drop and noting whether or not a pink color was produced.

The test with p. dimethylamidobenzaldehyd was performed as follows: To 5 cc. of peptone solution there were added 1 cc. of a solution of p. dimethylamidobenzaldehyd (2 g. in 50 cc. concentrated HCl+50 cc. water) and 4 cc. of concentrated HCl. After standing 30 minutes or more the tube was examined to see if the characteristic blue color was present. This test will hereafter be designated the Herzfeld test, since the technique given is essentially that of Herzfeld, as described by Plimmer.³

The glyoxylic acid test was performed in the following manner: To 2 cc. of peptone solution there were added 2 cc. of glyoxylic acid solution (Benedict's modified Hopkins-Cole reagent)⁴ and 6 cc of concentrated H₂SO₄. After 30 minutes or more the tube was examined to see if the characteristic blue or reddish violet color was present.

These one percent solutions of peptone

were then used for the growth of *B. coli* with no addition of sodium chloride. Where it was necessary the pH was adjusted to approximately pH 6.5 but as far as possible the solutions were used without adjustment of reaction.

In order that the seeding of the cultures might be as uniform as possible each tube was inoculated with one standard loopful of a 24-hour broth culture of *B. coli*, the amount of peptone solution in each tube being 10 cc.

After being incubated for from four to six days the cultures were tested for indol by a slightly modified Ehrlich method, as follows: 1 cc. of a 2% solution of paradimethylamidobenzaldehyd in 95% alcohol was added to each tube and then $\frac{1}{2}$ cc. of concentrated HCl was added drop by drop. The tubes were allowed to stand for at least half an hour before being examined for the presence of the characteristic rose-red color.

The results of two such experiments are given in Table I. The numbers indicate the different kinds of peptone, while the letters indicate different samples of the same kind of peptone.

TABLE I.

Comparative Intensity of Indol and Tryptophan Reactions with Different Peptones

	<i>Experiment 1</i>			
Peptone	Indol Reaction	Tryptophan Reaction		Remarks
1 A	Strong	Strong	{	Bromine and glyoxylic acid tests.
2 A	Negative	Weak		
3 A	Strong	Moderate		
4 A	Weak	No test made	{	Glyoxylic acid and Herzfeld tests.
5	Strong	Moderate		
6 A	Strong	Strong		
<i>Experiment 2</i>				
Peptone	Indol Reaction	Tryptophan Reaction	Reaction	Herzfeld
1 B	Very strong	Strong		Strong
1 C	Very strong	Strong		Strong
2 A	Negative	Weak		Negative
2 B	Negative	Weak		Negative
2 C	Weak	Weak		Negative
2 D	Moderate	Weak		Negative
2 E	Weak	Weak		Negative
2 F	Weak	Weak		Negative
3 A	Strong	Strong		Strong
4 B	Negative	Weak		Negative
5	Strong	Moderate		Moderate
6 A	Strong	Very strong		Very strong
6 B	Strong	Very strong		Very strong

The correlation observed between the indol tests and tryptophan tests would seem to indicate that a test for tryptophan

will show whether or not a peptone is suitable for indol production. A peptone giving a negative reaction or a very weak tryptophan reaction may be regarded as unsuitable for indol production, while a peptone giving a strong reaction may be considered suitable for the purpose. It should be noted, however, that in Experiment 2 peptone No. 6 gave the strongest reaction for tryptophan but peptone No. 1 gave the strongest test for indol.

Judging from the results of the two preceding experiments, it seemed that peptone No. 2 was not suitable for indol production and that peptone No. 4 was of doubtful value. But as peptone No. 2 is recommended for use in Dunham's solution with only 24 hours' incubation, further experiments were conducted in which it was tested along with several other peptones in the following manner:

The various peptones were used in making different lots of Dunham's peptone solution. Then in Experiment No. 3, six tubes of each lot were inoculated each with one oese of a 24-hour broth culture of *B. coli*. On each day afterward, up to six days, one tube from each lot was tested for indol by the Ehrlich test. In Experiment No. 4, on the contrary, inoculations were made each day for six successive days and all the tubes were tested for indol on the 7th day. The results of these two experiments are given in Table II.

It seems evident from the results of Experiments 3 and 4 that peptones No. 2 and No. 4 give good results with a short incubation time and poor results with increasing incubation time, while the reverse is true for peptone No. 6. Peptones No. 1 and No. 3 appear equally good with short or long periods of incubation.

The various peptones have been designated by number instead of by name because the object of the paper is not to show the superiority or inferiority of any particular brands of peptone, but rather to point out that "peptone" is a decidedly

TABLE II
Comparative Intensity of Indol Reactions with Different Peptones in Dunham Solutions

Peptone	Experiment 3					
	Number of Days Grown					
	1	2	3	4	5	6
1 A	Very strong	Very strong	Strong	Very strong	Very strong	Very strong
2 A	Moderate	Weak	Negative	Negative	Negative	Very weak
2 B	Weak	Negative	Negative	Negative	Negative	Weak
4 B	Moderate	Weak	Negative	Negative	Negative	Negative
6 B	Negative	Weak	Moderate	Strong	Strong	Strong

Peptone	Experiment 4					
	Number of Days Grown					
	1	2	3	4	5	6
1 A	Very strong	Very strong	Very strong	Very strong	Very strong	Very strong
1 B	Very strong	Very strong	Very strong	Very strong	Very strong	Very strong
2 A	Moderate		Decreasing intensity		Very weak	Negative
2 G	Strong		Decreasing intensity			Weak
3 B	Strong	Strong	Strong	Strong	Strong	Strong
4 B	Moderate		Decreasing intensity		Very weak	Negative
4 C	Strong		Decreasing intensity			Weak
6 B	Negative	Weak	Increasing intensity			Strong

variable quantity so far as indol production is concerned.

In this connection it should be noted that in "Standard Methods of Water Analysis" tryptophan broth is recommended for indol production. The use of so-called "standardized" peptones is, however, allowed and it seems quite probable that many, if not most, workers will use peptone, rather than tryptophan. If peptone be used the worker is strongly urged to disregard all claims for "standardization" and satisfy himself by actual test that the peptone he uses is suited for his purposes.

CONCLUSIONS

1. The varying composition of the different kinds of peptone available in this country may cause a typical strain of *B. coli* to give negative, weak or strong reactions for indol, depending on the

kind of peptone used, and the time of incubation.

2. It is advisable to test each new lot of peptone used in order to determine its suitability for indol production and also the optimum incubation time.

3. A test for the presence of tryptophan will usually indicate the relative value of any given sample of peptone for use in making indol tests.

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WATCH FOR THE NEWS LETTER

In order to reach the membership of the Association more effectively the August NEWS LETTER has been omitted and will be combined with the September issue in a special Semicentennial Meeting Number giving important news concerning all the activities of the meting.

Watch for this issue. If you are coming to the meeting you will need it. Instruct your secretary always to deliver the NEWS LETTER promptly to your desk.

THE HEALTH INSTITUTE

What is the Health Institute?
When is it going to be held?
How shall I register?

The Health Institute will consist essentially of a series of demonstrations for health workers of the health activities in New York City, both official and voluntary. The fundamental purpose is to enable the visitor to inform himself upon those phases of health administration which might be applicable in his own community. Thus, the visiting epidemiologist can investigate the routine procedures of isolation quarantine, and diagnostic tests. The child hygiene specialist will be able to see in actual operation pre-natal clinics, milk stations, baby welfare stations, nutrition clinics, and school inspection work. Where necessary, there will be lectures to supplement the demonstrations.

Dates

The Health Institute will be conducted during the week preceding the Annual Meeting; in other words, during some of the days between November 7th and 12th. The days being tentatively adopted are Tuesday, Wednesday, Thursday and Friday, November 8th, 9th, 10th and 11th. If the demand for the Institute courses warrants, additional days will be added. The final announcement on this subject will be made in one of the Association publications at least one month before the meeting. The Annual Meeting itself will be held November 14th to 18th, Monday to Friday inclusive.

Joint Sponsors

The joint sponsors of the Institute are the American Public Health Association, the Health Department of the City of New York, the New York State

Health Department, the United States Public Health Service, and the National Health Council. In addition to these bodies, over one hundred health societies, municipal bureaus, and universities have offered their co-operation for the success of the project.

Dr. W. A. Evans is chairman of the committee on Health Institute, and Dr. Donald B. Armstrong, acting director of the National Health Council, is serving as director of the Institute.

Subjects

For administrative purposes the Institute has been divided into nine groups of demonstrations. These subdivisions and their chairmen are as follows:

Child Hygiene—Dr. S. Josephine Baker, Chairman; Dr. Jacob Sobel, Vice-Chairman.

Socio-Health Activities—Mr. Bailey B. Burritt, Chairman; Mr. John C. Gebhart, Vice Chairman.

Laboratory—Dr. William H. Park, Chairman.

Vital Statistics—Prof. R. E. Chaddock, Chairman.

Communicable Diseases—Dr. L. I. Harris, Chairman; Dr. William F. Snow, Vice Chairman.

Industrial Hygiene—Dr. C. E. Ford, Chairman.

Food and Drugs—Dr. Payne B. Parsons, Chairman.

Sanitary Engineering—Mr. M. N. Baker, Acting Chairman.

Public Health Nursing—Miss Elizabeth Gregg, Chairman.

Conference Member—Dr. C. F. Bolduan.

Only those demonstrations will be given for which there is a demand. Requests are invited for demonstrations

in addition to those already planned. The duration of demonstrations will naturally vary. Where a number of demonstrations are contiguous and the subject matter is easily explained, the demonstrations may be as short as one hour. In other cases a half day or a full day will be needed. In general, an attempt will be made to economize the time and strength of the delegates by grouping demonstrations according to distance.

Send in Your Choices Now!

The following outline is given in order to permit members to indicate for the information of the Institute Committee the types of demonstrations most in demand by the membership. The outline is necessarily prepared somewhat hastily, and details are therefore omitted. They will, how-

ever, be supplied in later issues of the JOURNAL and NEWS LETTER.

If you expect to attend the Annual Meeting and if there is any possibility whatever of your being able to attend the Institute during four days of the preceding week, turn to page xxix, note on the coupon provided the numbers of the demonstrations in which you are interested, and forward to the director of the Institute, Dr. Donald B. Armstrong, National Health Council, 370 Seventh Avenue, New York City.

If there are other demonstrations which you would like to have added, submit your suggestion on the margin of the coupon.

Only those demonstrations will be established in which interest is manifested, so register your preferences, tear off the coupon (page xxix), and mail it now.

TENTATIVE LIST OF DEMONSTRATIONS HEALTH INSTITUTE, NEW YORK CITY, NOV. 8-11

Vital Statistics

Demonstrations proposed:

1. Mechanical devices, research, etc., Metropolitan Life Insurance Company, Statistical Department.
2. Division of New York City into sanitary areas for administrative and research purposes, New York Federation of Churches. Exhibit of maps and charts.
3. Division of Vital Statistics, New York City Health Department, methods of registration and recording births, deaths, etc.
4. Central exhibit of record forms for all varieties of clinic and hospital work, health centers, nursing associations, industrial plants, etc.

Hygiene of Mother and Child

Demonstrations proposed:

5. Meeting of licensed midwives at Borough of Manhattan Office. Demonstration at Bellevue Hospital School of Midwifery.
6. Pre-natal clinic and Baby Health Station Service.

7. Day nursery, child-caring institutions, and pre-school age clinics.

8. Little Mothers' League and Health League.

9. School Medical Inspection.

- a. Morning inspection.
- b. Routine classroom inspection.
- c. Physical examination.
- d. Consultation of parents.

10. Eye and dental clinics, Department of Health.

11. Sight conservation classes, open-air classes, and cardiac classes, public schools.

12. Nutritional classes and clinics.

Public Health Nursing

Demonstrations proposed:

13. Child Welfare Nursing.

Pre-natal work, methods of instruction and supervision, at baby health stations, and in homes.

School nursing, special clinics open-air classes, care of children at all ages.

Diet kitchen nursing service.

14. Preventable Disease Nursing.

Methods of procedure and system of record-keeping in control of infectious diseases at Branch Registration Offices.

District visiting with nurses to observe technique in families, especially among foreign-born.

15. Visiting Nurse Service.

Bedside care and instruction, obstetrical and contagious services, of Henry Street Settlement, Visiting Nurses Association of Brooklyn, and Catholic Nursing Sisters.

16. Social Aspects of Nursing.

Association for Improving the Condition of the Poor.

Baby Welfare Association.

Department of Public Welfare, New York City.

Co-operation with private social welfare organizations.

Visiting with social service nurses in homes needing relief or readjustment.

Socio-Health Activities**Demonstrations proposed:**

17. Community health work of the Association for Improving the Condition of the Poor, Mulberry Community House.

18. East Harlem Health Center, conducted by the New York County Chapter of the American Red Cross. In addition to regular activities, the organization will be studied in respect to co-operation of the neighborhood health agencies.

19. Hospital social service conducted by Bellevue and other large metropolitan hospitals.

20. Tenement House Department, New York City. Methods of handling complaints and violations of the Tenement House Law. Inspection of typical buildings.

Sanitary Engineering**Demonstrations proposed:****21. Water.**

New York City water chlorination plant, largest in the world. Dams, reservoirs, and aqueducts of Croton water system. City Water Works Laboratory.

East Jersey Water Company, filtration plant, Little Falls, N. J.

Hackensack Water Company, New Milford, N. J.

22. Sewage.

Reinsch-Wurl sewage screening plants, Manhattan and Brooklyn, New York City.

23. Streets.

City Street Cleaning Department, model street-cleaning area.

24. Garbage.

Newark, N. J., Garbage Disposal Plant.

Communicable Diseases (including Venereal Diseases)**Demonstrations proposed:**

25. Typical clinics—rabies, typhoid, tuberculosis, etc.

26. Machinery of City Health Department for isolation and quarantine.

27. Tuberculosis and contagious disease hospitals.

28. Diagrammatic representation of model venereal disease clinic.

29. Demonstration of standard diagnostic and treatment methods for venereal disease.

Laboratories**Demonstrations proposed:**

30. Laboratories of Rockefeller Institute, Bellevue and Mt. Sinai Hospitals.

31. Demonstration of standard methods in roentgenology.

32. Laboratories, City Department of Health.

33. State Department of Health Laboratory, Albany, N. Y.

Food and Drugs**Demonstrations proposed:**

34. Modes of testing food and drugs, City and Federal laboratories.

35. Methods of milk pasteurization, City Department of Health.

36. City machinery for inspection and supervision of markets.

Industrial Hygiene**Demonstrations proposed:**

37. Industrial Hygiene work of City Department of Health, including occupational disease clinics.

38. Demonstration of modern safety devices.

39. Medical departments of typical industrial plants of metropolitan district.

EDITORIAL SECTION

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HEALTH AND THE WINDOW BAKERY

In their relationships to public health new developments in business stand sometimes in a helpful attitude and sometimes in a harmful one, while occasionally the close attention given to commercial development arrays the previously helpful agency with those that are harmful, and more rarely, vice versa. When the successor to the old soda cracker began its commercial campaign in this country it undertook an important educative work in the introduction of factory-sealed food packages. In doing this it was forwarding, if not initiating, a very important movement in the interests of better health. Transferring from the thousands of retail stores to central well-supervised factories, the process of counting and packing and handling and supplying food products "from factory to you," the sealed package in this and many other specialties, has been a helper towards a bettered health of people. It has put the old-fashioned "cracker barrel" out of business. Health officers all appreciate its benefits and inspectors know how it transfers to comparatively few establishments the supervision that would otherwise of necessity cover thousands of scattered shops and stores.

When Newcomb introduced his foot-tread bubble-fountain, he was taking a step filled with potential benefit. He realized the health advantage to be gained by banishing the "common" drinking cup, and sought the advice of health officers in developing his models.

When the window bakery was devised it became a third agency that is potentially valuable to the public health. It has been able to bring into the light of day and under the conditions admitting of a good deal of public supervision and inspection a business that has been prone to lurk in cellars. A few municipalities

by drastic regulation have been able to have the business conducted properly and in well-lighted places, the master bakers having secured some helpful legislation, but the processes of bread-making in the well-tenanted sections of large cities have left much to be desired. In bringing the preparation of the important food staples that require the oven into places suitable for the work from the sanitary point of view, the window bakery movement is filled with promise.

There is sometimes a fly in the amber. The bubble fountain in its commercial evolution has assumed forms that carry with them the very danger that the principle seeks to avoid. Those who have seen the street urchins playing with the bulb bubblers, thumbing them to spray a fellow urchin or enveloping the whole bulb by the mouth to get the full stream of water, do not need to be told of its possible misuses, while investigators have condemned some forms because, like the jet that maintains in air the colored ball, they toss the dangerous germs aloft, and when the stream subsides carry them to within the bulb to lie in wait for the future patron. For these and other reasons many forms of bubble fountains are condemned by authorities on health. This does not in the least interfere, apparently, with the continued installation of insecure forms that are cheap, or the use of them where they are already in place.

The commercial instinct is now at work on the window bakery. There is a fruitful field for development because the people are always interested in "seeing the wheels go 'round." It is true that they are being established everywhere. In lifting the bakery into broad daylight certain conditions, due to comparative darkness and underground locations, are eliminated. But will new ones arise that require watching? That is the usual course of history. That is a development that health officers need to watch. So long as it is an "oven to customer" procedure, with the "cash and carry system of delivery," the benefits seem clear. But it is not to be forgotten that there is the entry more and more of foreigners into the business of food preparation, foreigners whose fundamental standards of sanitation and personal cleanliness may be much below our own. So long as the window bakery stays in the window it is likely to be well cared for, but there is already the tendency to relegate the machinery to the back room to the possible loss by the public of a measure of security. But the principle of having the people for inspectors is certainly an excellent one.

HEALTH EDUCATION OF CHILDREN

From time to time the point of view of the health officer has changed with reference to methods of accomplishing his work. Originally his duties were in the lines of compulsion and much stress has been laid on his police powers. His legal standing is today fundamentally that of obliging his community to observe legal requirements.

In these later days it has been realized that the health education of the people is to be the mainspring of future progress. There is philosophy in this, for the principle is clear that no health officer can for any length of time continue a course of action in which he has not the support of public opinion.

The work of educating the people in health principles is new, and American health organizations, public and private, have undertaken it, each from its own point of view. Health institutes for physicians, lectures for technicians, movies for popular audiences, discourses in foreign languages, automobile demonstrations and a multitude of other efforts have had their place, each addressing itself to a different population factor, much as diversified schools, from primary to post-graduate, cater to the needs of different culture groups. At the present moment attention is focused on the child in a good many departments of public health work. This also is philosophical, for while it would be unfortunate to neglect any of the older age groups, it is true that the future of the world, in health as in other matters, depends upon the child of today. If there is to be built up in our country a firm structure of good health of the people, the children are logically the foundation on which the structure must rest. Health education of children is therefore vital.

In the August issue of the *JOURNAL* Professor Turner gives variety to the discussion on the health education of children, and, quoting some results, asks whether teaching children about health and their own health should not be a part of the regular school work. The results quoted are those of what may be termed an experiment in the "laboratory method" of teaching health. The laboratory method of teaching, introduced into this country by such schools as the Rose Polytechnic Institute and the Massachusetts Institute of Technology, revolutionized instruction in certain branches and made American technical training the best in the world. It was the method of "teaching young men by making them do things." The latest suggestions in teaching health principles to children involve precisely this idea, that of making the child "do something," namely, care intelligently and interestedly for its own health—in reality a laboratory method that centers about the child.

While Professor Turner's experiments were under way in Massachusetts schools the Child Health Organization was developing a laboratory method in other schools in the country about New York City. Principles have been tested out of making the child a factor in its own health, which seem important.

One feature of the C. H. O. work has been the presentation of health to the children in terms of beauty, strength and joy, avoiding, unless absolutely necessary, all mention of illness or disease. Efforts have been concentrated on the formation of health habits in the child rather than the presentation of academic information about physiology or hygiene.

"In order to teach health effectively to children," writes one who has had a part in this recent experiment, "we must capture the interest and imagination of the child and help him express his new enthusiasm originally and creatively." Interest and imagination are to be excited in various ways, and to this end posters, plays and stories have been found to be valuable stimulants. These means catch the attention of the grown-ups, in whom the impression may be lasting, but in the child the interest is too often ephemeral and the lesson may not be carried long. With children the story or the play or the poster is likely soon to be cast aside.

It has occurred to those working among children that they might be induced to prepare their own material, the poster or the little tale, and the experiment has been tried. The results point to the fact that the thought and inspiration that underlie such productions by the child are most valuable, the knowledge gained by him is most helpful, and the lessons learned while caring for his own health, depicting health principles or telling about them, are most lasting. The child in his own studies of his own health bids fair to be a valuable aid in beginning public health education logically at the time when other educative efforts are also getting under way.

LETTERS TO THE EDITOR

Editor AMERICAN JOURNAL OF PUBLIC HEALTH:

As a member of the Ithaca Board of Health, I desire to make the following explanation relative to statements in an article by Dr. Haven Emerson and others in the April number of your JOURNAL relative to the milk situation in this city.

In that article it is stated on page 323, "For some reason, not fully understood, the University and city enjoy an exemption from the requirements of the public health law of the state so far as the labeling of grade, date and source of milk is concerned. Bacteriological examination of the milk as delivered is not used to check the quality of the supply."

When the milk code of the state of New York was formulated it was stated by the Health Department that it should be adopted excepting in those cities where they already had a satisfactory system of examining and grading the milk. Ithaca had a system based on the sanitary conditions of production, examination of the cows by a veterinarian and the bacteriological examination of the milk as it is delivered to the consumer. This system was presented to the Health Department and was accepted in lieu of the grading proposed by the code. We desired to continue our work on the basis already established which had been in use since 1907 rather than change to the Health Department system because their standards were designed for the larger cities and Ithaca was already getting a much better grade of milk than was required by the state standards. This fact is shown by the following:

Grade—	1919	1920
Excellent (0-10,000 bacteria per c.c.).....	43.87%	44.72%
Good (10,000-50,000 bacteria per c.c.).....	31.70%	27.83%
Fair (50,000-100,000 bacteria per c.c.).....	7.85%	9.32%
Bad (100,000 or more bacteria per c.c.).....	16.58%	18.13%

Bacteriological examinations of the milk are made at frequent intervals by a trained bacteriologist appointed by the Board of Health. He reports monthly to the Board of Health the results of these examinations and those producers who have an unfavorable examination are notified, their places in-

spected and unless the conditions are remedied the milk is excluded from the market. A competent veterinarian regularly inspects the farms and requires the elimination of any insanitary conditions of production. All cows are subject to careful physical examination and animals showing disease are removed at once. The veterinary inspector makes his reports regularly to the Board of Health.

At the present time, Prof. H. A. Ruehe, Professor of Dairying at the University of Illinois, is doing some special work at this University. He is living here with his family and voluntarily made the appended statement concerning the milk supply of Ithaca:

"If the milk which I am being furnished is a fair example of the quality of the milk which is being distributed in this city—and I believe that it is—all I have to say is that it is unusually good. When unpasteurized, unadulterated milk will keep sweet in the home for two and even three days under ordinary household conditions, there is only one conclusion to draw, and that is that the milk has been produced and handled with great care.

"I should like to say further that I believe the local Board of Health has gone after the milk question of this city in a conscientious manner; and that with their sensible, workable plan have been obtaining results that are to be commended."

DR. V. A. MOORE,

Dean N. Y. State Veterinary College, Cornell University, Ithaca, N. Y.



TESTIMONIAL

A testimonial to the Health Employment Bureau comes to the JOURNAL from Dr. L. J. Roper, Director of Health of Portsmouth, Va., who writes:

"In answer to my advertisement for a Chief Food Inspector, which appeared in the June number of the JOURNAL, I have had numerous applications from all over the country. As a result of our advertising I have been able to select, out of all the applications, the best man for the position. Your JOURNAL, as a medium for the selection of personnel for health organizations, is unsurpassed."

BOOKS AND REPORTS REVIEWED

Infectious Diseases. *Claude Buchanan Ker, M. D.* London: Henry Frowde, Oxford University Press, 1920. Second Edition. Pp. 627.

The first edition of this book, published about ten years ago, was the best work on the subject that had appeared. The reviewer recently saw a copy in a prominent contagious hospital which had been worn to tatters by the internes (and the superintendent, too). The second edition maintains its primacy. Prof. Ker, the superintendent of the Edinburgh City Hospital for Contagious Diseases, loves to observe and to record and is also a good teacher. His book, more than most books, is based upon his own experience which has been very extensive, but he has not hesitated to add to his own knowledge from that of others. His work is in every way up to date.

Prof. Ker is especially valuable in his discussion of symptoms, complications, sequelæ, diagnosis and treatment, but the sections on etiology, prevention and hospital management are entirely modern, sane and reliable. The diseases considered are measles, rubella, scarlet fever, smallpox, vaccinia, chickenpox, typhus fever, enteric fever, diphtheria, erysipelas, whooping cough, mumps and cerebro-spinal meningitis, a rather wider range of diseases than commonly comes under the observation of an American hospital superintendent. No person who has much to do with the diagnosis or treatment of these diseases can afford to be without this book.



The Principles of Ante-Natal and Post-Natal Child Physiology. *W. M. Feldman, M.B., Assistant Physician, Infants Hospital, London.* New York: Longmans, Green and Co., 1920. Pp. 694. Price, \$10.50 net.

Those interested in physiology in general and child physiology in particular will welcome the appearance of Dr. Feldman's book. The author tells us that he has spent several years in bringing together in a single monograph all the investigations up to date concerning problems of child life from the

germinal period up to adolescence. In this task he has consulted the researches conducted by Russians, Germans, Austrians, Frenchmen, Americans and Italians. It is difficult to think of any phase of physiology which the author has not touched upon in some detail. He has given a considerable amount of attention to the application of the principles of physics and physical chemistry to the study of physiological problems and this has rendered the use of a little mathematics necessary. The various mathematical problems are worked out step by step and the whole train of thought can thus be followed intelligently.

The first part of the book deals with antenatal physiology starting from the germinal cells and then the physiology of conception and the nature of the hereditary processes are discussed. The second part of the book is devoted to the post-conceptional or intra-uterine stage of development of the foetus. This part deals with the mechanics of development, the nutrition of the embryo and foetus, fetal respiration and circulation, fetal secretions and excretions, and the fetal muscular and nervous systems and the sense organs. In the third part of the book the post-natal stage is discussed and the various systems and organs of the child are treated in detail. There are about a thousand references and an excellent author's index.

Students of the modern public health movement have noted that we have passed through two stages of development, the first or stage of sanitation and the second or stage of the infectious diseases. The day is near at hand when great advance in public health will have to be made along lines of personal hygiene, that is the stage of physiology. For that day this book is a valuable preparation particularly for those interested in the welfare of children and in the problems of maternity. It should stimulate all physiologists, obstetricians, pediatricists, and it should be in the hands of all interested in the problems of child life. It is exceedingly well written and contains a wealth of valuable information.

D. GREENE, M. D.

The Health of the Industrial Worker.

Edgar L. Collis, M. D., and Major Greenwood, M. R. C. P., London and Philadelphia: P. Blakiston's Son and Company.

In studying the pages of this book one feels himself elevated to a new plane from which a clearer vision is obtained of industrial health problems, the proper solution of which in no small way affects the welfare and happiness of man. The combined experience of the authors, ripened by their intimate contact with the great industrial problems of the war, ably fits them, as pointed out by Sir George Newman in his introduction to the volume, to lay "something of a new foundation of the science and art of preventive medicine as applied to the industrial worker."

The first two chapters, dealing with the evolution and progress of industry and industrial hygiene from their early beginnings in England, form a necessary background to a proper appreciation of the subject matter which follows. The work completely avoids a discussion of the so-called dangerous trades and occupational diseases, dealing rather with the great problems of human wastage existing in all industry due to ignorance and neglect of the physiological principles applicable to efficient production.

Every one of the 18 chapters dips far beneath the surface in a search for the truths best suited to guide the physician and the industrial administrator.

Unique are the observations of the authors with regard to tuberculosis among males and females in relation to the factory and the home, and to rural and urban life. The chapters on Fatigue, Cancer, Cause and Prevention of Accidents, Food at the Factory and Feeding the Industrial Worker, Ventilation, Lighting, Sanitary Accommodations, Supervision of Industrial Health, and Industrial Employment of Women, average not more than 25 pages each and present a careful and clear analysis of the subjects in the light of the more recent knowledge and experience.

The industrial physician must needs measure the problems of human wastage or labor turnover in industry, just as the health officer in his work must be guided by community wastage as measured in terms of vital statistics. The authors deal

simply but thoroughly with the vital statistics of industry, adhering entirely to arithmetical methods. Some of the fallacies besetting attempts to compare by statistical methods the relative healthfulness of different pursuits are well set forth in Chapter III. This is specially true in the use of longevity as a factor of comparison.

Every industrial physician is daily presented with opportunities to practice the rather new art of rehabilitation of the disabled employe. Chapter XVIII discusses the reclamation of those disabled by accident and by disease, describing methods best adapted for the treatment of many troublesome conditions met with among industrial workers.

To every chapter is appended a bibliography, chiefly of English authors, and to the completed work, comprising 437 pages, is added an ample index. Altogether, the work is well gotten up and easy to read, the chapters being provided with frequent subheadings and the subject matter occasionally emphasized by the use of italics.

Notwithstanding the general excellence of this work, one looks in vain for some method of convincing the industrial worker of his needs in the matter of personal hygiene. Perhaps we should not expect to go very far in the education of the adult worker in health matters and should rather rely principally on the education of his children in the schools.

E. B. STARR, M. D.

**Sanitation for Public Health Nurses.**

Hibbert Winslow Hill, M. D. New York: The Macmillan Company. Pp. 211. Price, \$1.35.

This is a valuable addition to the series of text books on public health nursing issued by these publishers.

Dr. Hill is already known to public health nurses through his first book, *The New Public Health*. The simplicity and directness of his style, together with very picturesque illustrations have made this a popular volume with public health nurses, and one to which they constantly refer.

To define public health as "all that mankind may do to advance the physical welfare of any of mankind," opens so wide a door to the imagination in considering organization of community health work that

the attention is arrested at the opening sentences of Dr. Hill's new book.

The Chapter on Typhoid Fever (Chapter III); the Chapter on Vital Statistics (Chapter XVI); and that on Immunity (Chapter VIII) particularly, attract the interest of public health nurses. In his picturesque treatment of Vital Statistics, Dr. Hill has personified the dull figures vividly, and has given most valuable suggestions as to methods of transforming these figures into publicity material of the kind that will attract the multitude and focus attention on the lessons in health to be learned from them.

We are learning daily that health teaching in the homes is the only proper method of attacking the great problems of infant mortality, tuberculosis, mal-nutrition, and communicable diseases. In every chapter Dr. Hill's book is suggestive of more effective methods of bringing to each family the knowledge necessary to secure community health, because we are learning that it is upon the general health standard of the family that success in any specialty will depend.

MARY BEARD, R. N.



Collection and Disposal of Municipal Refuse.

Rudolph Hering and Samuel Greeley. New York: McGraw-Hill Book Co. 1921. Pp. 653. Price, \$7.00.

Sanitary engineers and municipal officials will welcome this long-expected book on the collection and disposal of municipal refuse. In their preface the authors state that the work has been in hand for ten years, but Mr. Hering's experience in refuse disposal covers a much longer time. The book differs from other books on the subject in that it is more comprehensive, better arranged, and better balanced. It is especially strong in its cost data, and while many of the figures given cannot be applied to the present changing cost conditions, they are of much value for comparative purposes, since the authors have endeavored to put them on a uniform basis. The book is also strong in its presentation of unit data concerning the quantities of refuse of different kinds.

The authors emphasize the important factor of refuse collection and show how it is intimately linked up with that of final dis-

posal. Too often the collection and disposal of refuse are treated as if they were separate problems, collection being put first and disposal second. As a matter of fact, it is more logical to decide first what the method of ultimate disposal is to be and then adapt the methods of collection to it.

The book is so long and the tables of data are so numerous that the authors have done well to place a paragraph of "summary and conclusions" at the end of each chapter. In discussing the selection of methods of disposal, they base their preference on three general principles,—sanitation, economy, and expediency. From the point of view of sanitation, first place is given to incineration, followed by reduction, hog-feeding at specially arranged farms, shallow burial in the ground, and dumping at sea or on land. In computing costs, they take into account six items of expense,—(1) cost of collection, (2) interest on cost of works and equipment, (3) depreciation, (4) repairs, (5) cost of receiving, treating, removing or selling the produced materials, and (6) administration, taxes, legal expenses and services. The receipts include (1) appropriation of funds by city or individuals, (2) proceeds from sale of pickings, (3) proceeds from sale of products. The requirement of expediency "must be left entirely to the judgment of the local governing bodies, after they have carefully weighed the questions of sanitation and cost, which should be considered mainly in the light of tendencies toward possible changes in local and cost elements."

Viewing the book as a whole, it may be fairly said that the book will take its place as the leading compendium of American practice in refuse disposal.

GEORGE C. WHIPPLE.



International Journal of Gastro-Enterology. A. L. Soresi, Editor, 220 West 59th Street, New York City.

The *International Journal of Gastro-Enterology* is a newcomer into the field of medical publications in this country, its first issue bearing the date of July, 1921.

It starts out with a group of original communications, a department of experimental medicine, reports of interesting cases, preliminary notes and other general

divisions of its special subject. It is profusely illustrated.

It presents two interesting comparative novelties, one, the addition to the customary summaries to papers of commentaries on the articles by various authorities including the Editor, and abstracts of them in English and in foreign languages for more general use than the technical readers to whom the detailed articles are addressed. The other is an article in Italian by Professor Mario Ponzio on "X-Ray Diagnosis" which concludes the group of original communications and of this there is an abstract in English. This is in keeping with the "International" character of the magazine. Some abstracts from the literature follow and an outlining of the program of the Journal.

In calling attention to the commentaries following the principal articles, the Editor speaks of some of his difficulties. These commentaries are secured by sending the papers that have been accepted for publication to men considered to be qualified to comment upon them, and they are received by them as practically anonymous so that the commentaries should be unbiased and based solely on the merits of the papers. This seems to be a new departure in medical work, although quite usual in a measure with scientific and engineering association journals. Dr. Soresi's difficulties in obtaining commentaries are certainly of interest. Some of the authorities to whom papers were submitted returned them with notes that were not altogether agreeable, some doubtless considering the service an imposition, while a number of contributors asked to have their manuscripts returned, because they did not wish the papers criticised in this way. A procedure like this must, of course, tend to a high quality of communications, since if an author realizes that what he is writing is to be discussed at once by other authorities, he will probably exercise more care in the preparation and presentation of his own material. It is evident from the program that the intention is to present papers

and abstracts in French, German, Italian, and Spanish.

The Journal accepts only unpublished, original papers, and intends to include only fully developed ideas. The communications which are, however, so to speak reports of progress, or which do not fully develop the ideas expressed by the authors will be published under the head of Preliminary Notes.

It is, of course, too early to discuss the value of the magazine, but the beginning is certainly suggestive of seriousness and a desire to fill a special place in medical literature.



The Sex Factor in Human Life. By T. W. Galloway. New York: American Social Hygiene Association, 1921. Pp. 142. Price, \$1.25.

Dr. Galloway's book is designed specifically as a means of educating those who are to be leaders, club leaders, "Big Brothers," college students, young men who naturally will come in contact with and influence many. It aims to qualify these men for moral leadership by equipping them with thorough, wholesome, essential facts concerning sex as a factor in human life. To this end the author has utilized every means to make his book interesting, concrete, informational, and practical. The question and answer method is used throughout. This method succeeds frequently in making an abstract subject concise and concrete.

Aside from giving discussions on the sex instinct, its control through sublimation; marriage, democracy and the home; sex and religion; Dr. Galloway discusses some popular misconceptions about sex. This topic is particularly useful because it touches upon the fallacies which have evolved through generations of ignorance and prudery, fallacies which youths are often persuaded to believe because of the general ignorance of the subject.

For the most part the book meets with requirements of intelligent young men, and is one which should attain great popularity among them.—(A. N. T.)

ASSOCIATION NEWS

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Wanted: An assistant in medical bacteriology at medical school. Will also have to do routine diagnostic work, Wassermanns, blood typing, etc. Salary, \$2,000 to \$2,500. Address Dr. M. P. Ravenel, University of Missouri, Columbia, Mo., giving age, training, experience, etc.

EMPLOYMENT BUREAU

HELP WANTED

Help wanted announcements will be carried free in this column until further notice. Copy goes to the printer on the 10th of each month for publication on the 20th. Mail to Boston office as early as possible.

In answering keyed advertisements, please mail replies separately to editorial office in Boston, Mass. In replying give age, professional training, salary requirements, previous positions held and three or more references.

Wanted: Chief of the Division of Communicable Diseases and Sanitations, under the title of State Epidemiologist. Salary, \$3,300 a year.

Chief of the Division of Child Hygiene. Salary, \$2,500 a year.

Three full-time Health Officers. Minimum salary, \$3,000 a year.

Applications for these positions should be made, stating training, experience and giving references. Address, Executive Officer, Kansas State Board of Health, Topeka, Kansas.

Wanted: A progressive superintendent of health for a city of 60,000 population. Salary \$3,500. Must be an M. D., a man of experience and able executive. Apply to Chairman Board of Health, New Britain, Conn.

POSITION WANTED

Positions wanted announcements will henceforth be carried in this column. The charge is \$2 per insertion. Copy should be received at this office by the 10th of the month.

Physician at present holding a position on the staff of a State Department of Health, desires to make a change and secure an appointment as full-time City or County Health Officer, Central or Western state preferred. Graduate of standard university and experienced in both administrative and field public health work. Address 175, B. C. E., care of this JOURNAL, New York address.

Wanted: Physician of mature years, and wide experience, excellent executive and good business man, wishes position as Superintendent of Health in large or middle-sized Northern or Western city, with well organized and equipped department. Sal-

ary not less than \$3,600. Best professional and business references. Address 176, G. M. R., care of this JOURNAL, New York address.

Wanted: Administrative position with state or city health department desired by public health expert with more than a dozen years' experience in administrative and consulting capacity. Reference furnished by leading health authorities of the country. Address 177, W. H. C., care of this JOURNAL, New York address.

Wanted: Bacteriologist desires position as director of a city laboratory; woman; B. S. degree; seven years' experience in hospital, state and city laboratories (two as Director of City Laboratory); trained in general bacteriology, including milk and water; serology; clinical pathology, and some blood chemistry. Public Health work preferred, but a hospital position considered. Address 178, S. P. M., care of this JOURNAL, New York address.

Wanted: Bacteriologist, holding B. S. from leading Middle Western university and with several years' experience in public health laboratory work in South, desires change. Capable of directing and handling all phases of public health laboratory work, clinical microscopic diagnosis and serology. One year in charge of city and county laboratory. At present Assistant Director in large Southern city. Address 179, M. G. R., care of this JOURNAL, New York address.

Wanted: Bacteriologist and Chemist wants position as bacteriologist. 15 years' experience as Public Health bacteriologist, State and Municipal. Have had the directing and handling of all phases of laboratory work. At present on the faculty of a university in New York City, and now doing research with the gonococcus and complement fixation work. Free by the end of October. Address 180, B. T. G., care of this JOURNAL, New York address.

Wanted: Position as a full-time health officer of city, city-county, or with a state department of health. Have had five years' experience as a health officer. References and detailed information as to previous work will be furnished. Address 181, H. C. E., care of this JOURNAL, New York address.

PUBLIC HEALTH NOTES

Abstracts by D. GREENE, M. D., M. P. HORWOOD, Ph.D., JAMES A. TOBEY and HOMER N. CALVER.

Prophylaxis of Syphilis With Arsphenamine.—During the last six months, about 30 patients have undergone the prophylactic treatment with arsphenamine. Most of them were selected by making a diagnosis of active syphilis in the opposing partner. The prophylactic doses averaged 0.3 grams of arsphenamine and the number and intervals of injections varied with the time since the first exposure, from no less than three doses to one case to six doses. The six doses are being applied to a woman whose husband came under observation with the eruption of secondary syphilis and a history of chancre for six weeks. It is the purpose of the doctors to treat this woman as a Wassermann negative primary syphilitic and prevent the symptoms of the generalization of the disease. There is no consistency as to the interval of injections, varying from one every other day to one every five days, depending upon the physical condition of the patient. The women had the longer interval in the great majority of the cases.

The patients have been under observation long enough to state that the primary incubation time passes without the appearance of the primary lesion. No patient has developed a positive Wassermann reaction, although it was not possible to repeat the tests in all of the patients.

Both French and German literature have reports, several of which antedate this work. No claim of priority is made, and additions to this bibliography are welcome.

Stühmer was the first to advocate the institution of specific therapy in cases of suspicious genital lesions. Taege proposes the use of arsphenamine during the incubation period. Fournier and Guenot report the abortion of syphilis by arsphenamine used during the incubation period. Lacapere and Laurent made some interesting observations which show that prophylaxis with arsphenamine is effective.

As far as Drs. Michel and Goodman can ascertain, there are no reports of the failure of arsphenamine to prevent syphilis, when injected during the incubation period of the disease.—Leo L. Michel, M.D., and Herman Goodman, M.D., *Jour. A. M. A.*, Dec. 25, 1920. (*A. N. T.*)

Broader Aspects of the Tuberculosis Problem.—Most people believe today that tuberculous infection takes place in infancy or early childhood, and that the disease becomes apparent later in life, when the vital resistance of the body is reduced. There are two schools of thought which attempt to explain this breakdown of the individual mechanism. The eugenists believe that the race stock or protoplasm of the individual is the chief contributing factor, and point to the high tuberculosis death rates among the Irish and Negroes as proof of their contention. Another group believes that the breakdown is due to the lack of adequate food, not only in amount, but in kinds of food in the diet. There is still another group that maintains that the environment plays a very important part in this matter. Such factors as poor housing, overcrowding, unsatisfactory conditions of employment, long hours of labor, fatigue, poor wages, lack of recreation, imperfect and inadequate school hygiene and public health education, previous communicable diseases, a milk supply obtained from tuberculous cattle,—all of these may have a very important relationship to the prevalence of tuberculosis. If that is so, then every movement to improve the general conditions of hygiene and sanitation in the community aids directly in the suppression of tuberculosis.—Philip P. Jacobs, Ph. D., *New Jersey Public Health News*, April, 1921. (*M. P. H.*)



Ideal of Health.—The creation of an ideal of health is the only effective way in which to interest children in their own health habits. Instead of talking to the little ones about the bad cold that will result from some indiscretion, or the pain that will result from overeating or the wrong kinds of food, we must give the message of building a strong and beautiful body. We must build in the children's minds a picture of the mystery and wonder of the body, showing the effect on its workings of such processes as sleep, exercise and the habits of diet.—Sally Lucas Jean, *Public Health Nurse*, May 1921. (*M. B. D.*)

Dental Hygiene in Japan.—A pamphlet on "Dental Public Service in Japan; Its Present Condition," by Dr. Tamejiro Kawakami, Professor of the Tokyo Dental College, presents a very interesting report of the progress being made in the Oral Hygiene Movement there. The Dental Societies Association of Japan representing about 65 other dental societies is making a detailed study of this movement. Oral inspection of school children in certain cities show that 90 per cent of Japan's school children have decayed teeth. Oral Hygiene Exhibitions are growing very popular, the Dental Societies Association having provided 45 different models and 65 types of pictures and charts for this purpose.

Oral Hygiene Day held in Tokyo November 5, 1920, for the first time proved to be very successful.

Nine motor cars were assigned to different parts of the city to spread oral hygiene propaganda. In each of these cars a dentist accompanied by a pressman and a city official delivered speeches at all of the important street corners. The machines flew "flags of precaution against decayed teeth" and 500 dental students distributed handbills and small flags on dental hygiene propaganda.

It is estimated that nearly one out of every ten of Tokyo's 2,173,162 inhabitants was presented with either a hand-bill or a flag. This movement against decayed teeth was extensive and the results were very effective.

There are 6,409 licensed dentists in Japan or six times the number that there were in 1907. An average of six hundred dentists are graduated every year.—*Dental Hygiene News*, May, 1921.



Enlightening the Public.—The basis of the modern fight against tuberculosis is enlightenment, instruction and education of the public. This is carried on mostly by pamphlets and printed rules. Usually the patients read and understand them either imperfectly or not at all. The author proved this by giving the patients verbal orders to bring in specimens of sputum and urine with the result that almost everyone complied with the order. To another group of patients he handed pamphlets in which he enclosed slips on which were printed the same directions. The results were less good. The third experiment in which he

printed the same directions inconspicuously on the second page of the pamphlet had the result that practically all the patients failed to bring in the specimens. He therefore places little value on printed matter and tries to carry on all education and instruction verbally. Special informatory and advisory office hours were instituted at the *Fürsorgestelle*. Special lectures are given with open discussions and practical demonstrations. They are so well attended that it has become necessary to hold them in a larger hall. There will always be people who can learn from printed directions, but the great mass of the people will follow verbal instructions better.—Besorcher, Abstract in *Amer. Rev. of Tub.*, March, 1921, 1.—(D. G.)



Future of Medical Practice.—Profound changes in the relation between the medical profession and the state have created a necessity for the state and the profession to come to a realization of the principles which should govern their interrelation.

What seems to be needed in the abstract, is first a single unit of health government with necessary subcommittees for particular purposes. This would involve the following principles: one authority in each area to be responsible for all administration of health services from local rates; the absorption of the work of the Poor Law in a public health service; and the unification of the local authority of all public medical provision for the sick and infirm of all ages. Second, a *uniformity of administration* is necessary; and third, there is a principle which the profession must not forget—that the local unit of health government must be *representative* of the will of all the people as a whole.

Moreover, there is a need of a national policy, dealing with the medical problems of maternity, infancy, childhood, adolescence, adult life, and old age; with the prevention and cure of non-infectious as well as infectious diseases; with the education of the public in hygiene. Then, too, there is a need to bring together in proper relationship the provision of proper medical treatment in the home, clinic, hospital, and convalescent institution for the whole society.

Next, there is the question of hospital position. Where should hospitals be situated, how financed? What can be done to reorganize after-care and the proper con-

valescent treatment of the patient? These require medical and lay judgment and experience.

Finally, perhaps most important of all, is the need of an adequate method of medical education which shall equip the undergraduate and the practitioner. The doctor must not only retain the skill of former days, but he must also be furnished with an improved training in new subjects, in preventive medicine, and in political science of communal responsibility. The further education of the practitioner must include adequate professoriate, hospital, and laboratory accommodation and organization.

From the point of view of "medical sociology," the doctor must be the missionary of hygiene. He must disseminate knowledge of sobriety, cleanness of living, the prevalence of venereal diseases, of prostitution, the causes of certain crimes, the integrity of family life; and also the cultivation of international science, coöperation, and amity.

Dr. Newman concludes with the following statement:

"... The profession is responsible for its own contribution—a contribution which consists partly in a correct diagnosis of its own disabilities and the conflicting and prejudicial tendencies within its own body, partly in a fuller understanding of the needs of the state, and partly in readiness to make itself thoroughly well equipped and competent to render the remarkable public service which in this generation has fallen to its lot."—Sir George Newman, *London Lancet*, July 17, 1920.



Five Years of Sanitary Progress Against Typhoid in West Virginia.—The Division of Sanitary Engineering of the West Virginia State Department of Health has issued an attractive 36-page pamphlet outlining its five years of effort in coping with typhoid. Nineteen water-borne epidemics of typhoid are described. They are divided into four classes, (1) those due to the use of raw, untreated river water for drinking purposes; (2) those due to unsafe water on account of inadequate filtration of the river water; (3) those due to infected wells; and (4) those due to the interruption of chlorination of the water supply. Nine epidemics fall in the

first class and three in each of the others. A description of each epidemic and how it was controlled is given. A number of striking charts are included and several tables show the cost of typhoid to the citizens of the various communities. It is stated that in Wheeling alone the toll in lives and money needlessly spent was more than \$1,350,000 in the period 1910-1920. The total loss due to the 19 epidemics, exclusive of Wheeling, is estimated at nearly half a million dollars. This figure is used as an argument for a suitable appropriation for the work of the division. The work of this progressive division in West Virginia, of which Mr. E. S. Tisdale is Director, well illustrates the necessity for a division of sanitary engineering in every state. There is no more important bureau in a state health department.—(J. A. T.)



Preventive Dentistry for Infants.—Preventive dentistry should be practiced upon first appearance of the deciduous or baby teeth and continued throughout life. With a soft napkin on the finger, moistened in fresh or salt water, the infant's teeth and gums should be carefully cleansed several times daily. This, while of benefit to the teeth and gums, also accustoms the child to dental manipulations, and if continued will establish the dental toilet as a routine part of the personal hygiene of youth. As soon as the child has erupted the baby molars, the dentist should be visited for a thorough inspection of the teeth. At this time painless methods of treatment may be sufficient to prevent or arrest tooth decay. A psychic factor not to be slighted is that the dentist should not be mentioned in the presence of the child as one to be visited with dread. Experiences dealing with the pain and discomforts of the dental chair should not be related in the hearing of the little patient. This has a definite plausible relation to preventive dentistry, for dental operations involving pain may be escaped if skillful dental attention is promptly and regularly administered during and after infancy. However, the majority of individuals have not selected parents who are mentally and financially equipped for the proper fulfillment of dental care during infancy and childhood.—*Indiana Monthly Health Bulletin*, Jan., 1921. (J. A. T.)

Immunity and Tuberculosis.—We can count from memory at least three new antisera and four new tuberculosis vaccines which have come to our notice since the war ended—most of them with the blast of trumpets in the daily press—and a reference to contemporary medical journals would reveal a considerable addition to the number. There is also a chapter of immunology just opening, with accounts of the protective powers of certain special types of proto-plasms against the tubercle bacillus. Witness the almost supernatural accounts of recent experiments with the caterpillar and the snail in destroying the inoculated tubercle bacillus. These accounts recall the early records of Richet's experiments on the sea anemone and anaphylaxis when immunologists paused in wonderment. And the results may not be dissimilar—fascinating and yet disappointing in their application to man. It is essential, therefore, that if we strive for the mastery over the tubercle bacillus we strive by right methods. The late Sir Michael Foster once said that the physiologist should exercise his imagination to the full outside laboratory, and should forthwith eschew it when he reached his bench. This warning is probably more needed now than at any time since Darwin first preached evolution. It has also been said that when the bacteriologist suffers from nightmare he is haunted in his dreams by a hideous row of control experiments which he has neglected to perform. We could almost find it in our hearts to wish that some men suffered from this nightmare a little oftener. Failure to control experiments is a serious mental aberration on the part of the bacteriologist, and when the clinician turns bacteriologist he is particularly liable to this form of mental disorder. How many valueless tests have been made in the study of tuberculosis, and how many wrong conclusions drawn by failure to make controls with the normal? We need to control the virulence and purity of our cultures, the toxicity of our media, and a hundred other factors; and when we come to use antisera there is a whole new field of control research awaiting us on the influence of normal serum on immune bodies and on pyrexia and metabolic processes generally, which at present we have barely visualized. Nor are these the only factors. The physician, if he be honest with himself in testing

a tuberculosis vaccine or antiserum, must make controls as to dosage and auto-inoculation; he must compare the normal individual with the abnormal. In the ideal experiment there is only one variable factor, the one on which we are at the moment researching; all else is stabilized. These are conditions we should aim at. Here especially is the clinician's pitfall, because it is hard to equalize things by the bedside. And the climax of research is reached in those statistical results known as "cures" which beset the path of every worker. No phase of work is more readily misinterpreted. A little difference in the method of choosing cases, a little carelessness in following up our results, a little variation in the "end-point" of a clinical reaction which is rarely as clearly defined as a titration in volumetric analysis, a little undue optimism about that fatal phrase "quiescent lesion," and it is all up with our statistics. The penalty is paid by the patients. One moral is to pay a vast deal more respect to the accurate meaning of the word specific. Having exalted the term to a special place in the vocabulary of immunity, let us not prostitute it to the use of every new and untried remedy in vaccine and serum therapy.—Editorial Comment, *Lancet*, April 2, 1921, 712.—(D. G.)



Passaic Valley Sewage Decision Against New York.—On May 2, the United States Supreme Court unanimously denied the application of the State of New York for an injunction against the discharge of sewage from the Passaic Valley Sewerage District into New York bay. The decision ends litigation begun more than twelve years ago. The State of New York maintained that the discharge of Passaic Valley sewage would create a public nuisance by causing offensive odors, or unsightly deposits on the surface of the harbor waters, or that it would seriously add to the pollution of the bay. The Court maintains that this was not proven. It also pointed out that New York City is discharging much more sewage than the Passaic Valley section, and that during the period between 1906 and 1919, the increase in population of New York City was approximately equal to the total population of the Passaic Valley Sewerage District. The decision also recognizes the dissolved oxygen content of

waters as the standard for measuring the degree of pollution, and also that sewage disposal by dilution is the legitimate method of sewage treatment. The decision of the Supreme Court is undoubtedly the most important opinion on sewage disposal since the famous Chicago Drainage Canal Case.—*Engineering News-Record*, May 19, 1921. (M. —(M. P. H.)



Contaminated Hands and Objects in the Spread of Disease.—The pathogenic bacteria present in the secretions of diphtheria and scarlet fever may be cultivated from the surroundings of the patients, but in the former disease less often than in the latter. Improperly sterilized eating utensils may readily serve as carriers of infectious material. The thorough washing of the hands with soap and warm running water efficiently removes the secretions with which the hands may become contaminated. To facilitate this, the skin of the hands and nails requires special care in order to insure a smooth healthy surface and freedom from any local condition which may render thorough cleaning difficult or impossible.

Gauze masks protect the faces of nurses from gross contamination with particles of air-borne secretions. Cultures from the hands of attendants are a useful check on the individual technic of those caring for contagious diseases. Cultural studies of the surroundings of patients with contagious diseases may serve to indicate the efficiency of the technic employed, and if applied at intervals they seem to stimulate attendants to greater efforts toward perfection.—W. J. Matousek, *Jour. A. M. A.*, May 28, 1921, 1490. (D. G.)



Experiments in Epidemiology.—At the last annual meeting of the Association of American Physicians, Flexner and Amoss reported some experiments in epidemiology. These studies consisted of artificial control of epizootic outbreaks. The organism used was *B. typhi-murium*. The mice were assembled to represent a village. One hundred normal mice free from *B. typhi-murium*, were put in twenty cages. Ten mice were then fed a heavy suspension of the organism, and were put among the hundred normals. Roaches and

flies were eliminated. Eight of the ten infected mice came down, and seven of the normal mice, by contact. After thirty days, another series of mice was brought in. The epidemic progressed in a series of waves, the crests of which became smaller. Among the first mice exposed the deaths were higher and more frequent than among the others. After two weeks there were no more deaths. The mortality now was 68%; originally it was 58%. They were again restocked, and the mortality now was 14%. It was supposed that greater mortality would occur among new arrivals, but it was about the same among old and new. The number of carriers was found to be in inverse proportions to the death rate—the higher the death rate, the fewer the carriers. The carriers had agglutinins in the blood, but these were not protective against a new epidemic wave. The strains of organisms had different virulence at different heights of the disease.—*Jour. A. M. A.*, May 28, 1921, 1525. —(D. G.)



Cobwebs vs. Quinine.—For 1,500 years the peasants of the Pontine district of Italy, near Rome, have been trying to cure malaria with pills whose principal ingredient is cobwebs. Needless to say, they have not succeeded very well, and as a result fever takes a startling toll of lives every year in this unhealthy region.

Recently, however, the Junior Red Cross of America, through its three orphanages, has introduced the miracles of quinine among these people, who are direct descendants of the Sabines and retain many of their pagan customs. Cobweb pills have, therefore, lost some of their prestige in face of the cures which have been made, and offerings to the fever goddess, which formed a sort of secondary treatment, are going out of style.

The Pontine region is one of the most unhealthy in Italy. Most of the women have been widowed two and often three times by malaria, this curious state of affairs being accounted for by the community law which forbids the women to leave the high and dry places where the villages are built to accompany their husbands who go to their daily labor in the fever filled valleys.

STATE HEALTH NOTES— LEGISLATION

National. Congressional Procedure.—From report of National Health Council indicating action up to July 7, 1921.

NEW LEGISLATION

S. 1084. National budget. Introduced by Senator McCormick, April 25, 1921, and was passed by the Senate and the House, the latter on May 5. The conference report was finally agreed to in the Senate on May 26 and in the House the following day. The President appointed Brigadier General Charles G. Dawes as Director of the Budget.

General Dawes called a meeting of all government bureau heads on June 29, 1921. The President, Vice-President, Cabinet members, members of the Smoot-Reavis Committee and General Sawyer also attended. After a brief address by the President, in which he stated that the Administration was committed to a policy of economy and efficiency in government, General Dawes spoke for about an hour and explained the plans of his bureau. The Bureau of the Budget will proceed at once to gather information concerning government expenditures. Each department will name a budget representative who will present to the director the views of the cabinet head upon the conclusions drawn by the Director of the Budget. The Bureau of the Budget will work in close cooperation with the Smoot-Reavis Joint Committee on Reorganization and also with the Congressional Committee on Reclassification. A budget for the fiscal year 1922 is to be drawn up and the plan is to attempt to reduce expenditures and hold the departments to the budget figures, regardless of Congressional appropriations. It is, therefore, likely that appropriations for health work will be among those reduced. General Dawes has also issued an order that heads of executive departments shall make an immediate survey of all supplies on hand.

H. R. 7365. For the construction of a hospital at Galveston, Tex. Introduced by Mr. Briggs on June 24, 1921. Referred to Committee on Public Buildings and Grounds. This bill provides for the construction of a hospital to cost \$400,000 for the care and treatment of patients of the U. S. P. H. Service.

H. R. 7369. Makes illegal the pollution

of navigable waters of the United States by oil and other refuse matter. Introduced by Mr. Appleby of New Jersey, June 24, 1921. Referred to Committee on Rivers and Harbors. This bill makes it unlawful for any person or any corporation, specifically mentioning shipowners and shipowning companies, to throw, discharge or deposit any oils or refuse, other than that flowing from streets and sewers, into any navigable waters of the United States. A penalty is provided.

H. R. 7459. Levies tax on condensed, evaporated or concentrated milk. Introduced by Mr. Fordney of Michigan, June 29. Referred to Committee on Ways and Means. This measure imposes a special tax of \$1,500 per year for each and every factory manufacturing condensed, evaporated or concentrated milk. It also levies a tax of \$750 on every wholesaler selling or handling this product and a tax of \$12 on every retailer. A penalty is fixed for failure to pay tax.

H. R. 7541. Commissioned status for sanitary engineers in United States Public Health Service. Introduced by Mr. Sweet of Iowa on July 1. Referred to Committee on Interstate and Foreign Commerce. This bill gives sanitary engineers of the U. S. P. H. Service the rank, pay, emoluments and privileges of the commissioned medical personnel. It also stipulated that no additional appointments as commissioned sanitary engineers shall be made except after the applicant has passed examination before a board of officers.

A Division of Welfare has been created by Postmaster General W. H. Hays in the Postoffice Department. On June 27 he announced the appointment of Dr. Lee K. Frankel, a Vice-President of the Metropolitan Life Insurance Company, Vice-Chairman of the National Health Council and formerly President of the American Public Health Association, to the position of Director of the Postal Service Welfare Department. Dr. Frankel accepted the position and began his duties at once. He serves without pay.

It is reported that one of the lines of betterment by Dr. Frankel will be an effort to improve sanitary conditions in the post-offices in every city and town in the country. A thorough study of health and medical conditions among employees is being

made. The first step in the welfare work was an order issued through Dr. Hubert Work, first assistant postmaster general, who is also ex-President of the American Medical Association, which reads as follows:

"At the request of the Treasury Department all postmasters who are appointed by that department as custodians are notified that they are expected to render efficient service in that capacity and see that the buildings under their jurisdiction are maintained in a sanitary condition and conducted as efficiently and economically as possible, consistent with the regulations."

At Dr. Frankel's request, the National Health Council will cooperate in supplying data through its Washington office.

PROGRESS ON MATTERS PREVIOUSLY REPORTED

S. 1039. Sheppard bill for the protection of maternity and infancy. After discussion at various times during the last three days in June it was voted on June 30, 1921, to take it up on the tenth legislative day after June 30. The Senate is then to vote on the bill with its amendments with limitations on the length of the speeches.

An amendment to the bill was introduced by Senator Moses on June 30. This provides for investing the authority for the administration of the act in the U. S. Public Health Service instead of the Children's Bureau. The argument supporting this amendment is that the U. S. P. H. S. with its staff is better prepared to enforce protection of maternity and infancy than is the Children's Bureau of the Department of Labor. A previous amendment, introduced April 28, 1921, was never acted on. It provided for cooperation between the Federal Government and state governments in the matter.

S. 2116. H. R. 7294. Willis-Campbell bill prohibiting sale of beer for medicinal purposes. Passed by the House and favorably reported in the Senate. On June 27 the House of Representatives passed the Willis-Campbell bill by a vote of 250 to 93. The measure was brought before the House by a special rule from the Rules Committee after Chairman Volstead of the Judiciary Committee had failed to convince the Committee that his own measure should be given a special rule in the House. The committee rejected the Volstead bill and

drew up its own bill, known as H. R. 7294. Senator Willis of Ohio introduced the identical measure in the Senate and it was referred to the Committee on the Judiciary. H. R. 7294 contains many of the same provisions with amendments of the original Volstead measures presented to the House and known as H. R. 5033, H. R. 6752 and H. R. 6752 with amendments.

Opponents of the measure made a fight on the floor of the House, declaring that the legislation violated the eighteenth amendment to the Constitution, which, they declared, only prohibited the sale of beer for beverage purposes and could not, therefore, be interpreted as preventing a physician from prescribing beer for his patients. They ridiculed the bill as attempting to regulate the practice of medicine by statute, and cited many eminent medical authorities to show that beer was efficacious as a medicine and was constantly prescribed by physicians in the practice of medicine. Another argument advanced was that the proposed act permitted physicians to prescribe whisky and liquor, which contained a larger percentage of alcohol than beer and, therefore, was more harmful and dangerous to the public health. Upon a special rule, the bill had to command a two-thirds majority of the House, which was accomplished on the final ballot. The terms of the measure as affecting the medical profession are as follows:

(a) Prohibits further importation or manufacture of liquor until the present stock held under government supervision for medicinal purposes is exhausted.

(b) Prohibits sale of beer to the sick upon a prescription issued by a physician.

(c) Limits the number of liquor prescriptions to be issued by physicians to 90 every three months.

This bill was favorably reported in the Senate by the Judiciary Committee on July 6, 1921.

S. R. 77. King resolution to investigate lobbying in Washington. The sub-committee is expected to report soon to the Committee of the Judiciary of the Senate. There appears to be a division in the sub-committee, some members desiring to limit the investigation to the lobbyings of the interests advocating a tariff on dyes, while the minority favors investigating all interests

that maintain representatives in Washington.

H. H. 6611. Sweet bill for creation of Veteran's Bureau. The Senate Committee on Finance, to whom this measure was referred after its passage by the House of Representatives, June 10, 1921, scheduled hearings on July 5, 1921. No witnesses reported to give evidence before the committee and the meeting spent its session in the discussion of amendments and changes as suggested by Director Forbes of the Bureau of War Risk Insurance and approved by the American Legion.

S. R. 93. Resolution to investigate bureaus and agencies caring for war veterans. Introduced by Senator Sutherland, June 13, 1921. Referred to Committee on Audit and Control of Contingent Expenses. Favorably reported without amendments.

The Hospitalization Board appointed by Secretary Mellon to study and make recommendations concerning the expenditure of the \$18,600,000 appropriated by the last Congress, made its first report to the Secretary of the Treasury on June 20, 1921. The report was immediately approved. It provides for the expenditure of \$3,010,000 upon seven hospital projects as follows:

At U. S. Public Health Service Hospital No. 55, Fort Bayard, N. M.; expenditure of \$850,000 for construction of permanent hospital unit of 250 beds and improvement of existing facilities.

At U. S. Public Health Service Hospital No. 42, Perryville, Md.; expenditure of \$500,000 for erection of buildings to accommodate 300 neuro-psychiatric patients and improvement of existing facilities.

At Fort Logan H. Roots, Little Rock, Ark.; expenditure of \$250,000 for remodeling the post hospital to provide for treatment of approximately 300 neuro-psychiatric patients.

At Lake City, Fla.; expenditure of \$300,000 for the construction of buildings and for improvements to an addition of a tuberculosis unit of 300 beds.

At Fort Walla Walla, Wash.; expenditure of \$450,000 for the construction of a general hospital of 150 beds.

At Whipple Barracks, Prescott, Ariz.; expenditure of \$600,000 for enlargement of present hospital of 400 beds caring for tuberculosis patients.

At Alexandria, La.; expenditure of \$60,000 to re-erect buildings recently destroyed by fire.



District of Columbia.—The District is governed by Congressional enactments.

S. 2040. Capper bill regulating school attendance and child labor in the District of Columbia. The Senate Committee on the District of Columbia made a favorable report on June 28, 1921. The bill provides for compulsory school attendance, taking of a school census, creation of a Department of School Attendance and Work, and regulation of child labor. The matter of child labor is cared for by a consolidation of the existing child labor office with the new Department above noted and by having it operate under the supervision of the Superintendent of Schools.

S. 2205, 2206, 2208, 2209. Introduced by Mr. Ball on July 5. Referred to Committee on District of Columbia. These bills provide for enlarging the powers of the Juvenile Court in order to protect the childhood of the District.

H. R. 7212. S. 2208. Introduced by Mr. Underhill in House on June 17 and by Mr. Ball in Senate, July 5, 1921. Referred to the Committees on the District of Columbia. This measure authorizes the Secretary of the Treasury to detail a medical officer of the Public Health Service with special knowledge in the diagnosis of insanity and mental defects, to examine children brought before the Juvenile Court of the District of Columbia. The appointment of a social worker or psychologist to assist in these examinations and perform other duties in regard to delinquent children of the District is also provided for in the bill. The sum of \$10,000 is appropriated to cover expenses.

H. R. 7570. To regulate the practice of optometry in the District of Columbia. Introduced by Mr. Focht on July 6, 1921. Referred to Committee on District of Columbia.

S. 758. Myers bill prohibiting experiments on living dogs in the District of Columbia. Hearings were heard before the Senate Judiciary Committee on June 29, 1921. Only one witness appeared, Dr. W. R. Hadwen of England, whose testimony was entirely in opposition. No action was taken.

National. Congressional Procedure.—National Health Council Report brought down to July 21, 1921.

NEW LEGISLATION

S. 2241. H. R. 7699. Industrial rehabilitation of the blind. Two bills identical in language giving authority to the Secretary of the Treasury to grant to any person who is blind permission to establish a stand for vending newspapers or other articles in any public building under his control.

A number of other bills have only incidental health interest, namely: H. R. 7787, with reference to the continuation of the Monthly Labor Review; H. R. 7738, to reimburse officers, enlisted men and members of the Nurse Corps of the Army for civilian medical expenses while away from their commands; H. R. 7687, authorizing boards of investigation of the U. S. P. H. Service to subpoena witnesses; H. R. 216, incorporating disabled veterans of the War; and S. 1565, for the retirement of all disabled officers of the Army under equal terms.

PROGRESS ON BILLS PREVIOUSLY CONSIDERED

S. 1039, H. R. 2366. Sheppard-Towner Bill for the Protection of Maternity and Infancy. Hearings in the House were begun July 12, 1921, and were in progress on July 21. From the questions of the Committee it would seem as if the attitude of the majority is in favor of the bill. There is some doubt as to what bureau should administer it. On July 12 in the Senate Senator Kenyon introduced a technical amendment, placing it under the administration of the Children's Bureau.*

H. R. 6611. Sweet Bill for a Veteran's Bureau passed the Senate July 20.

Most of the amendments in the Senate clarify the language of the House bill. There is no change in the consolidation policy of the original Sweet measure, which provides for one bureau in the Treasury department, combining the Bureau of War Risk Insurance, the Rehabilitation Division of the Federal Board of Vocational Education and so much of the U. S. Public Health Service as relates to the examination, assignment to hospitals and welfare of the former service men. Some of the amendments provide for the protection of the patients in hospitals against arbitrary penal-

ties without appeal for infraction of rules. Another increases the pay of attendants of blind or disabled soldiers from \$20 to \$50 per month. Besides transferring the personnel of the various bureaus and services consolidated into the Veteran's Bureau, the Senate bill as finally passed included transfer of all equipment, records, files and property. The bill now goes to conference.

H. R. 7294. Willis-Campbell Bill supplemental to National Prohibition Act before the Senate. By a vote of 47 to 17 the Senate on July 18, 1921, deferred action on the Willis-Campbell bill, which has already passed the House, and which prohibits the sale and manufacture of beer for medicinal purposes. Senator Sterling, in charge of the bill, made a determined effort to make the anti-beer measure the unfinished business of the Senate, but a motion by Senator Norris favoring consideration of his measure providing financial relief for the agricultural interests passed by a safe majority. In the meantime, Senator Sterling has announced his intention of bringing up the measure at every opportunity until it is finally disposed of. Various members of the Senate have spoken for and against (it seems as if, to date, mostly against) the bill. Three amendments to the proposed act have been presented to the Senate since June 28, 1921:

- (a) Amendment by Senator Wadsworth, introduced July 12, 1921, provides that the prohibition against importation shall not include distilled spirits of American production shipped abroad and then reimported in original packages.
- (b) Amendment proposed by Senator McCormick July 18, 1921, gives authority to any assistant or agent to perform any act authorized to the Commissioner of Prohibition.
- (c) Amendment presented by Senator McCormick adds "or his duly authorized agents in the several states" whenever the word "Commissioner" is contained in the bill.

H. R. 4981. Amendment to Pure Food Law Passes House. This measure, known as the Slack-Filled Bill, passed the House on July 6, 1921, and went to the Senate, where it was referred to the Committee on Agriculture and Forestry. It is an amendment to the Pure Food Act and its purport

*The Sheppard-Towner Bill passed the Senate on July 22. Further details in the October JOURNAL.

is to compel manufacturers of all products to fill boxes and other containers according to the weight designated upon the outside.

S. Res. 77. Investigation of Lobby Activities. Senator Cummins of the Committee of the Judiciary on July 12, 1921, submitted a report to Senate on the resolution creating a special committee to investigate lobbying. The report is favorable to an investigation, but amends the original resolution and confines the proposed investigation to the dye industry. The amended resolution is referred to the Committee to audit and control contingent expenses of the Senate.

Government Reorganization — Progress. Walter F. Brown, Chairman of the Smoot-Reavis Joint Committee on Reorganization, has announced that he will present to the President and the cabinet very soon, tentative plans for regrouping the various government departments. The general bill providing for the first changes will also be before congress in a short time, according to the information given out.

H. J. Res. 174 by Representative Reavis provides that the House of Representatives shall pay out of its contingent fund one-half of expense of Smoot-Reavis Joint Committee on Reorganization of Government. S. Res. 109 by Senator Warren provides the same thing with respect to the Senate.



District of Columbia.—S. 2083. Regulates Embalming and Undertaking in District of Columbia. Referred to the Committee on the District of Columbia. This bill provides for the establishment of an undertaking and undertakers' and embalmers' examining.

H. R. 7038. To Create a Department of School Attendance and Work Permits for the Administration of the Child Labor Act in the District of Columbia. Referred to the Committee on the District of Columbia.

H. R. 4118. Raker Bill for Prevention of Venereal Disease in District of Columbia. This bill would compel persons not under a physician's care to report themselves victims of venereal diseases to the health authorities within three days after becoming aware of the existence of the disease. The House District of Columbia Committee held hearings on this measure on June 14, 1921. The legislation was endorsed by all of the witnesses, although certain sections were opposed, because of supposed interference with personal rights of citizens.

Florida.—The 1921 Legislature reduced the mileage allotted to the State Board of Health one-half, thereby necessitating considerable curtailment of important work in order to keep within income.



Illinois.—An important measure enacted by the 52nd General Assembly is the provision for approximately 25 state health officers to be known as district health superintendents. While the State Department of Public Health feels that the county is the logical and most practical unit in which to organize and build up efficient public health service in Illinois, and that the passage of Senate Bill No. 294, providing for full-time health officers in every county of the state, would have constituted a much saner and more progressive step than the provision for 25 district health superintendents, still the latter represents a decided step forward and offers a beginning and an opportunity to demonstrate the value of more intensive public health service.

With the additional personnel referred to, public health administration in Illinois will compare more favorably with that in some of the other progressive states. New York state, with 62 counties, has 15 full-time medical health officers each assigned to a definite district. Massachusetts with 14 counties has seven district health officers. Ohio with 88 counties has 44 full-time county health officers. Illinois ought to have at least 65 full-time district or county health officers.

If active, energetic men with good training and experience are selected for the district health superintendents, there ought to be a marked increase in the efficiency of public health administration in this state, and a considerable improvement in the public health.



Nevada.—The Rules and Regulations for the Control of Venereal Diseases, recently published by the State Board of Health include a group of older rules of various dates of adoption and some recent ones. The older rules include definitions, treatment only by a licensed physician, notification by physicians and dentists, records, announcement of name, isolation of suspected persons, repression of prostitution, forbidden occupations including food handling, laundry and swimming pools, aid to physicians

in diagnosing, reporting of unusual prevalence, and coöperation with the U. S. P. H. Service. There is an act relating to Barber shops dated 1917 requiring sanitary practices.

New legislation dated March 22, 1921, prohibits advertisements and enforces prevention of ophthalmia neonatorum. It is now unlawful in Nevada for any person to publish, distribute, post, display or manufacture any label or advertisement which refers any person to any place at which may be obtained treatment for venereal and allied diseases or medicine for such treatment. The penalty is a maximum fine of \$500, or six months' imprisonment. Exceptions are the U. S. P. H. Service, the state of Nevada or any political subdivision of the state. With reference to infant blindness it is incumbent on the doctor, midwife or attendant to report any swelling or unusual conditions of the eyes of the new born. The duties of the local officer and of the State Board and officials are prescribed.

The final section of this act provides that none of the provisions of the act or of the laws of the state regulating medicine or healing shall be construed to interfere with the treatment by prayer, or with any person who administers to or treats the sick and suffering by mental or spiritual means, nor shall the person who selects such treatment for the care of disease be compelled to submit to any form of medical treatment.



New York.—The health legislation for 1921 includes the following items in amendments to existing statutes:

Chapter 249—Authorizes second and third class cities to create public health departments in place of boards of health and provides for full-time health executives, who in second class cities will have the title "Commissioner of Health," and in third class cities that of "Health Officer." The term of office of such officials is made four years, instead of two, as at present.

No person shall be eligible to appointment as commissioner of health or health officer unless he is a physician or surgeon licensed to practice under the laws of New York state, has practiced as such or been engaged in public health work for a period of five years and has complied with the qualifications prescribed by the Public

Health Council. Exception is made in the case of physicians who have received the degree of doctor of public health in an institution of learning recognized by the University of the State of New York.

Authority is given for the appointment by the mayor of an advisory board consisting of five resident and practicing physicians.

Chapter 509—Empowers county boards of supervisors to establish a general health district which may include the county or any part or parts thereof; except that no first or second class city, and without its consent no third class city, may be included in such district. The act makes provision for the continuance of present existing local health districts, and for the completion of the term of office of present local health officers.

Chapter 566—Amends penal law in relation to reinspection of premises where females or children are boarded.

Chapter 708—Repeals the narcotic drug law and abolishes the department of narcotic drug control. All books, papers, records and documents are turned over to the State Commissioner of Health, but no duties are transferred.

Chapter 510—Provides for a division of sanitation of the State Department of Health and transfers certain duties heretofore assigned to the State Department of Health to the State Engineer: viz., the approval of plans for sewerage and sewage disposal for municipalities and town sewer districts and for the discharge or disposal of wastes from industrial establishments.

Chapter 130—Empowers board of supervisors in counties not having a tuberculosis hospital to appoint and employ such public health nurses as such boards may deem proper.

Chapter 263—Empowers boards of supervisors in counties not having a tuberculosis hospital, to organize and operate clinics for the medical examination of persons who are or may be suffering from tuberculosis.

Chapter 398—Provides for the registration of unrecorded births when certified copies are required *at any time* after the birth (instead of within ten years) and for the filing of sworn statement of facts within one year after the death of a person—where it appears that no certificate of birth or death was made or filed at the time same occurred.

Chapter 269—Amends chapter 411, laws

of 1917, relating to the registration and supervision of laboratories where live pathogenic germs are handled, by elimination of the provision excepting "places where live pathogenic germs or cultures of such germs are handled for duly organized public health boards or departments and for no other person or institution."

Chapter 270—Amends section 20 of the public health law by providing that members of boards of health of consolidated health districts shall be allowed a per diem compensation and their actual and necessary expenses.



Pennsylvania.—Note has already been made with reference to the number of health enactments by the State Legislature, but the variety of subjects considered in them was not given. The Governor approved bills on the following subjects: Untrue, deceptive or misleading advertisements; oleomargarine, butterine, etc.; Federal appropriation for venereal disease; disposition of drugs offered in evidence; designating State Asylum for the chronic insane as a hospital for persons suffering from syphilis; homes for indigent orphans; maintenance of tuberculosis sanatoria; amendment to vital statistics law; amendment to act relating to practice of medicine; amendment to law pertaining to quarantine and communicable diseases; appropriating to the department of health moneys received from the United States for hospital and sanatorium facilities for discharged sick and disabled soldiers, sailors and marines; coroners' fees in second class counties; examination and segregation of prisoners for certain conditions on admission to jails or penal institutions; practice of pharmacy; creating Department of Public Welfare; bottling establishments for non-alcoholic drinks; tuberculosis sanatorium, West Mountain, Scranton, Pa.; women and children; management of contagious disease hospitals; service of legal process re lunatics, etc.; housing—first-class cities; examination and treatment for venereal diseases (prisoners); amends anatomical act; appropriates money from U. S. for promotion of sanitation, public health, etc., etc.; gifts to orphans' homes; marriage license law—additional fees; drug control; promulgations of Advisory Board, etc.; food handlers—public eating places; cigarette

law amendment; prohibits advertising for venereal diseases; Dental Council and State Board of Examiners; appropriation for burial of indigent patients at Mont Alto; juvenile offenders; adulterated butter; pharmacies; licensed dental assistants and dental hygienists; vocational rehabilitation; houses of prostitution (injunctions); optometry; medical inspection of schools; drug addicts and inebriates; county tuberculosis hospitals; burial of bodies of indigent persons.

Bills that did not receive the Governor's approval related to protection of food from flies, dental practice and marriage licenses.

For the two years ending June 1, 1923, the appropriation totals for the State Health Department are approximately those of the preceding two-year period; for which period \$5,364,128.00 was appropriated for the use of the State Department of Health.



Wisconsin.—The public health laws of the state have been materially strengthened as the result of the favorable attitude towards health problems shown by the Legislature and executive branches of the state government. The Legislature provided a fund of \$51,000 per year for general administration of the State Board of Health, \$41,250 per year for venereal disease control, \$13,300 per year for the Bureau of Communicable Diseases, \$5,000 per year for the supervision of rest-rooms and comfort stations, \$31,100 for the first year and \$21,100 for the second year for the Bureau of Child Welfare and Public Health Nursing. The former appropriations of \$7,490 for laboratories and \$1,500 for silver nitrate were renewed. Other funds are received under the licensing laws.

Other acts passed which affect the State Health Department were:

Providing for a full-time health officer in all cities of 25,000 or more.

Providing for vaccination of school children at expense of the municipality, except where parents choose their own physician for the purpose; and reducing the exclusion period when smallpox is present from 25 to 14 days.

Transferring the jurisdiction of registered nurses from the Board of Medical Examiners to the State Board of Health, and providing for a committee on nursing education and a Director of Nursing Education.

STATE HEALTH NOTES— GENERAL

National.—A concerted effort is being made by the U. S. Public Health Service and the National Park Service to make the national parks of the United States safe and sanitary for the vast number of Americans who have recently taken to touring them. Before the war, when tourists were fewer and most of them traveled on stage lines and stayed at park hotels, the sanitary problem was simple. Since the war, however, the great majority travel in automobiles and camp out, enormously complicating all health matters.

Since early in January the U. S. Public Health Service at the request of and in co-operation with the National Park Service, has been preparing for the work; and on May 15, it sent its first sanitary engineers into Yellowstone, Mount Rainier, Yosemite, and Grand Canyon parks. Other engineers, or engineers who have finished work on their earlier assignments, will go to other parks. Only in the largest and most popular parks, such as the Yellowstone, will it be necessary for a sanitarian to remain all summer.

The work consists in examination and protection of water supplies, disposal of garbage and sewage, inspection of milk and food and the way they are handled; providing for camp policing and sanitation; and prevention of malaria. Malaria-carrying mosquitoes have been found in Yosemite Park; and especial efforts will be made to eradicate them there and to prevent them from "acquiring a residence" in other parks.

Safe water on river steamers is now assured. The days when carelessness in regard to the supply of drinking water on river steamboats, particularly on the Mississippi, sowed typhoid fever and dysentery among passengers, seem to be over. Since April, when the U. S. Public Health Service assumed the supervision of water supplies on steamboats engaged in interstate commerce, boat companies on the Mississippi and Ohio have installed water purification apparatus for supplying their boats; and independent vessels are fast installing them where necessary; that, is where an ample supply of "certified" water is lacking.

Children who go to work between 14 and 18 years of age need special protection if they are to reach manhood and womanhood

with good health and well-developed bodies. The United States Department of Labor through the Children's Bureau has just issued a report called "Physical Standards for Working Children" in which a committee of eleven physicians appointed by the Children's Bureau explain how the health of children at work may be protected.

An effective means of protection lies in the adoption of physical standards which all children entering industry are required by law to meet. Eighteen states now have a law requiring children to be examined before going to work. These states are: Alabama, Arizona, California, Connecticut, Delaware, Illinois, Iowa, Kentucky, Maryland, Massachusetts, Minnesota, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, and West Virginia.

Periodical examinations for children after they have gone to work are recommended by the Committee as a still further means of protection. As yet no state has taken this step, though an exceptionally good opportunity for putting into effect an adequate program of health supervision, says the report, is furnished by the compulsory continuation-school laws now in force in 22 states.



California.—At a meeting of the State Dental Association, held in San Francisco the last week in June, more than 500 delegates were pledged to stimulate activity in the promotion of dental hygiene work in their respective communities. Dr. J. Camp Dean, of Oakland, newly elected President of the Association, said: "With these delegates personally promoting the care of the teeth as part of the curriculum in the schools in California, dental clinics of this state should surpass those in all other states."

The Dental Hygienists of California participated in the program of the California State Dental Association Convention, June 30th. Besides the exhibit given, papers were read to each of the four groups of dentists assembled for classes on Thursday afternoon.



Colorado.—The Colorado Tuberculosis Association has been active in forming branches in the different sections of the state, four

having been organized already the present year. The list of these branches, which in the later organizations take the name of public health association, is the following:

The Denver Tuberculosis Society—1917.

The Colorado Springs Branch—1919.

The Pueblo Public Health Association—1919.

The North Larimer Public Health Association—1919.

The South Larimer Public Health Association—1919.

The Boulder County Tuberculosis Association—1919.

Mesa County Public Health Association—1921.

Weld County Public Health Association—1916.

Chaffee County Public Health Association—1921.

Prowers County Public Health Association—1921.

Rocky Ford Public Health Association—1921.

In addition to these there are twelve other towns distributed throughout the state which are already suggesting similar action to their citizens.

In its little bulletin the Association sets forth the following modern principles of health betterment:

"Public health work is here to stay. It took the war to awaken us to the social and economic value of health. Any reconstruction plan which makes for social betterment will improve the health of the state. The prevention of tuberculosis, the abatement of industrial disease, and the reduction of infant mortality are some of the problems which must be met by the health agencies."



Florida.—One of the things that has been done by the newly appointed State Board of Health of Florida is to "lay its cards on the table and make to the people of the Commonwealth a statement of the actual facts as they exist." The appropriations for the next two fiscal years, ending June 1, 1922, and June 1, 1923, are \$95,000 and \$100,000 respectively. The report of the retiring Board shows that \$167,486.46 was expended in 1919 and \$150,219.44 in 1920. If the activities under way were continued the cost for 1922 would be about twice as much as the appropriation.

"It goes without saying," writes Dr. Raymond C. Turck, the new Health Commissioner, "that to keep expenditures within the amount of the income it is, and has been, necessary to curtail present work, and further that promotion of new activities at state expense is impossible."

Dr. Turck asserts that the legislature must have been misinformed as to the needs of the Board, for "any fair-minded body having any knowledge of the immense economic value of modern health work, and of the crying need of this state along that line" could not have cut down the appropriations to a point where the functioning of the Board is hampered. Owing to the lack of funds the state will be obliged to cut down its work seriously and in a very restricted manner keep alive the Bureaus of Child Welfare and Venereal Disease, and do what other things its funds will permit.

The Board is very outspoken and it will not be its fault if the people of Florida do not learn some truths about the administration of public health.



Hawaiian Islands.—As a monument to her husband, the late Ex-Governor George R. Carter, Mrs. Carter is making an effort to provide dental service in the public schools of Honolulu. Dr. Alfred C. Fones of Bridgeport was consulted by the proponents of the plan and a preliminary survey has been made of the mouths of the fifth grade children in Honolulu. It was found that the average was at least six cavities per child. This, it appears, is about the record in Bridgeport, Conn., and there proves to be quite a similarity in the food of the children despite the geographical distance separating their homes.

At the present time Mrs. Carter plans to build a dispensary and to organize a training school for dental hygienists in September. Probably the preventive clinic in the schools will open simultaneously with the dispensary and the ideal combination of prophylaxis education and reparative dentistry will be provided for the children of Honolulu.

Legislative aid has been invoked to pay the salaries of the dental hygienists.



Illinois.—A new catechism on poliomyelitis has just come from the press. The questions and answers appear in simple

language and cover the subject very inclusively. This catechism was prepared by the State Department of Public Health for the benefit of physicians and others who may be interested. The basis for the information that appears in the catechism has been gained through the operation of a large number of clinics (now 25) that have been conducted regularly throughout the state during the past four years, for the after-care of victims of infantile paralysis. Those who wish a copy of this circular may obtain same upon application to the Department.

Two new motion picture films, "The Long versus the Short Haul" and "The Trump Card," have been added to the loan service of the Department. Films are available to local communities without cost except for transportation charges one way.



Massachusetts.—The Scientific Temperance Federation of Boston announces reports on three investigations conducted by it during the past year, which are available for the use of physicians and public health administrators. The first of these concerns the reputed increase of narcotic addicts under prohibition. Evidence from all sections of the country obtained from public health and law enforcement officials showed that there was practically no increase traceable to prohibition of alcoholic liquors, the apparent increase noted in a few cases being due to enforcement of anti-narcotic laws.

The second investigation was with reference to the value of alcohol as a preventive of or remedy for influenza and pneumonia. The third study was of statistics in New York City making a comparison of mortality figures before and after the enactment of prohibition legislation.

The Federation states that its reports present evidence without drawing conclusions.



Michigan.—Higher birth rates and lower general death rates prevailed in the cities of Michigan and the reverse in the country districts during the first five months of 1921, according to figures from the State Health Department. In the cities the birth rate was 26.4 per thousand of population while in the country it was 23.6, while the mortality rates were 11.8 and 12.6 respectively. The infant mortality for the cities was 86 and for the rural districts, 77.

The motor clinics of the State Health Department have been busy the past year and are beginning a new year with the first of August. Since September, 1920, the clinics, of which there are two units, have examined 7,474 persons in 33 counties and have turned away an equal number for lack of time. It is expected that the remainder of the state can be covered before snow flies.

Dr. Olin, Health Commissioner, is endeavoring to impress upon the minds of the public the facts that diphtheria and smallpox in a community are unwarranted since man has been furnished by science with an absolute preventive for both. Both these diseases show increase in Michigan over the incidence last year.



Minnesota.—The anti-rabic work of the Minnesota State Board of Health has been discontinued, for two reasons, first the comparative rarity of the disease, and second the fact that commercial vaccines of reliability are now on the market. The State Board will continue to advise with physicians and will furnish them with lists of reliable commercial houses producing the vaccine. It will continue further to make laboratory diagnoses of suspected animals.

The poliomyelitis after-care work which has till now been a function of the State Board of Health has been given over to the State Hospital for Indigent Crippled and Deformed Children. In order to avoid confusion, however, and perhaps a delay in the recording of cases, physicians are asked to notify the State Board of all cases of infantile paralysis as well as of epidemic meningitis.



Nevada.—At its meeting at Elko, on June 24-25, 1921, the Nevada State Medical Association passed a resolution endorsing the State Board of Health for the promulgation of certain regulations for the prevention and control of venereal diseases, and further the physicians pledged the hearty coöperation and support of their association in the execution and enforcement of these laws. The rules and regulations in question are a bringing together of a number of different enactments and approvals, those of recent date being set forth in this issue of the JOURNAL under "State Health Notes—Legislation."

New Jersey.—About one hundred and fifty physicians from New Jersey, New York and Pennsylvania attended the conferences on the diagnosis and treatment of gonorrhea and syphilis, which were given at Newark, N. J., under the auspices of the Venereal Disease Bureaus of the New Jersey State and Newark City Health Departments.

The first session, which was devoted to syphilis, began with the discussion of an exhibition of stereopticon slides illustrating "The Cutaneous Manifestations of Syphilis," by Dr. Howard Fox, of New York.

Among the slides shown were numerous illustrations of the severe types of late cutaneous syphilis that are rarely seen at the present day on account of our improved methods of diagnosis and treatment. The routine treatment of syphilis and the demonstration of the drugs used at the Bellevue Hospital Clinic was discussed by Dr. Mهران B. Parounagian of New York, Director of the Department of Syphilology, Bellevue Hospital.

The necessity for the routine use of dark-field in fresh lesions and the blood Wassermann tests when the lesions no longer contain the *Treponema pallidum* was explained in detail to impress the importance of these procedures on the physician in private practice. Dr. Parounagian urges the use of the spinal punctures in tests for the diagnosis and treatment of latent or neurosyphilis, discussing the kinds of arsphenamine to be used in various types of cases, and expressed his preference for the old arsphenamine rather than the neo-, except in spinal cases. At the Bellevue Clinic over 4,000 silver arsphenamine injections had been administered and the observations are that silver arsphenamine gave less reactions and better clinical results than the other forms of the arsphenamine group.

In the afternoon meeting the staff of the Newark Hospital Dispensary Clinic demonstrated the administration of the various forms of arsphenamine and the injection of both soluble and insoluble mercury salts. Dr. H. S. Martland, Director of the Newark Hospital Laboratory, demonstrated the differential diagnosis of the *Treponema pallidum* with living cultures of the organisms of syphilis and Vincent's angina. The technique of the Wassermann reaction and the colloidal gold test was explained.

The Thursday session was devoted to the diagnosis and treatment of gonorrhea. It was opened with three operations at the Newark City Hospital which were followed by practical demonstrations of the accepted treatment for gonorrhea, conducted in the Newark City Dispensary Clinic by the clinic staff. In the afternoon there were papers by Dr. E. L. Keyes, Jr., of Cornell Medical College and Dr. Colin Luke Begg of the Post-Graduate Medical College, and Dr. C. R. O'Crowley conducted a bedside demonstration at the Newark City Hospital.



New Mexico.—The outbreak of typhus fever occurring among the Navajo Indians of northwestern New Mexico has been taken in charge jointly by the Indian Medical Service and the U. S. Public Health Service. P. A. Surgeon C. Armstrong has been detailed by the Public Health Service to act as local adviser to the physicians of the Indian Service. C. E. Waller, of the U. S. Public Health Service, who is Acting Director of the New Mexico State Bureau of Public Health, has been directed by the Service to supervise the work of typhus control. In the latter part of June, Dr. Waller and Dr. Luckett, of the State Bureau of Public Health, made a trip through the northwestern part of the state, for the purpose of discovering possible cases of typhus among the Navajos scattered over this territory. Only one case was found, that of a young man who had been in the vicinity of the typhus focus on the Reservation.



New York.—The Venereal Disease Division of the State Health Department has secured the use of the Social Hygiene Association field car for use throughout the state. This car will be sent to counties where the Home Bureau Agent makes a request for its use and agrees to arrange in advance for at least one lecture for men each day it is in the county. Lecturers will be furnished by the Division. Ten counties have already requested the use of the car.

According to reports received by the State Health Department, some of the dyes used in coloring toy balloons are capable of causing a severe inflammation when brought in contact with the skin while in a moist condition. Children should be warned against the pastime of making miniature balloons from the ruptured rubber by suck-

ing or blowing against small pieces of the balloons held tightly against the lips.



North Carolina.—Interesting statistics with regard to the age groups affected by typhoid fever have just been compiled by the State Board of Health. There has been a general belief prevalent that only people of the so-called middle age are susceptible to this disease. The death certificates on file with the Board show such an idea to be erroneous. During the first four years of official death registration in this state typhoid fever is given on death certificates as the cause of death of 266 people above 50 years of age, and of 262 infants who were under five years old. During that period five persons above 85 years and 28 under one year of age were victims of this preventable disease. These statistics show that typhoid is no more a respecter of age than it is of sex or color; that the infant in the cradle and the old person approaching dotage are susceptible even as are those in the full course of adult strength.

In the six weeks ending July 1, 1921, 361 children have been treated for diseased tonsils and adenoids in clinics operated by the State Board of Health in five counties of the state. Splendid coöperation is being manifested by both the public and the medical profession in the conduct of these clinics for the remedying of defects in school children discovered through the medical examinations conducted in the schools as required by the state law. At a recent clinic one of the leading local physicians entered his own child in the clinic with the expressed belief that better treatment would be accorded than in a regular hospital.



Ohio.—As a part of the reorganization law, the State Bureau of Vital Statistics becomes a part of the State Department of Health. Since its establishment in 1909, the Bureau has been attached to the Secretary of State's office. The transfer to the State Department of Health has been repeatedly urged for years by health workers both within and without the state. For the first time in its history the State Department of Health will be equipped with the necessary statistical machinery to correlate the returns of deaths and sickness which are the fundamental figures required to intelligently direct the preventive measures

against those diseases which cause so much suffering among the people of the state.

There were 5,944 deaths from tuberculosis in 1920 as against 6,542 in 1919, and the rate was 101.1 per 100,000 of population as against 114.6 in 1919. This is the most sensational decline in the tuberculosis death rate since the beginning of the intensive campaign against the disease in 1910, when there were 150 deaths per 100,000 population. The decline was steady until 1915, the beginning of the war period. The rate climbed during the war and in 1918, due largely to the influenza epidemic, reached 145. The present rate of 101.1 is the lowest on record and it offers a new goal to those organizations and individuals engaged in the conservation of health and happiness.

The state appropriation law effective July 1, carries provision of \$10,000 for each of the two fiscal years for the conduct of tuberculosis clinics throughout the state. These clinics will be organized and conducted by the State Department of Health. Two preliminary clinics have already been held through the coöperation of the State Sanatorium, the State Department of Health and the Ohio Public Health Association. Experience gained through these clinics should enable the new work to go forward without delay.

A graded outline of health instruction for the eight grades in the public schools has just been completed by Miss Virginia Lewis, Crusade Director of the State Association. State Superintendent of Public Instruction Vernon M. Riegel has adopted the course and plans to have printed copies in the hands of teachers throughout the state not later than September 7. The course has been designed to make the teaching of health attractive to the pupils and to give the teacher the necessary guidance and assistance in the use of material.

The Public Health Federation of the City of Cincinnati has in prospect the Cincinnati Health Exposition in Music Hall, Cincinnati, October 15-22, 1921. The Cincinnati Board of Health, Chamber of Commerce, Department of Education and practically all the health agencies in the city, together with the U. S. Public Health Service, will undertake this educational exposition for the benefit of the health of the citizens who will receive a striking lesson in the elements of health and hygiene. Halls with a floor area

of three-quarter of an acre will be devoted to exhibits, about one-third of them only, commercial, and there will be features in the great auditorium, which will give their lessons to audiences of 3,600 persons at a time. A health pageant is to be staged, there will be health movies, and each afternoon and evening will be devoted to some specialty that appeals to the people carrying with it health information of value to the community. There are more than 60 local organizations to take part in the exposition, with ten or a dozen state societies and half a score of national ones.



Virginia.—In a recent public address before ministers, Dr. Ennion G. Williams, State Health Commissioner, spoke about the health conditions or rather conditions of ill health resultant from modern practices of modern dancing, modern dressing and unchaperoned automobile parties. He called attention to a number of definite factors contributing to a better moral condition, the abolishing of liquor selling as a legal business and the wiping out of red light districts. He called attention to the fact that every state has a bureau organized to fight venereal diseases. Whether the results have been greater morality or not he did not undertake to answer, but there is reduction in the number of cases of venereal disease.

There are, however, certain social habits that are tending to increase immorality. "There has been a considerable and constant increase in divorces," he said. "Illegitimate births are occurring in circles where such disgraces were formerly unknown. Social workers tell us about the increasing delinquency among the younger girls.

"As the Health Commissioner of the State, charged with the conservation of the public health, I appeal to you as conservators of morals and ask you to consider three recent developments which, in my opinion, contribute most to create the deplorable conditions we are facing. These are: (1) Unchaperoned night automobile parties. (2) Indecent modern dancing, and (3) immodest dressing. To these might be added suggestive movies; but I hold that the three which I have enumerated are the chief evils. These habits or customs are dangerous since

they appeal to the sex instinct and offer opportunity for immorality.

"Laws can punish vice, but they cannot make a people virtuous. Laws cannot regulate or obliterate the three temptations which I regard as most serious; but the home and the church can control them. Parental influence and the guidance of you pastors are the dominating factors, if the evil is to be dominated. The laws which control those affected with venereal disease, which punish those who practice commercial vice, have only a doubtful control over immorality, if any control whatsoever. It is, therefore, to you, representatives of the church, that I appeal to guard our homes and save our civilization."



Virginia.—The example of Cho-Cho, that amusing creation of the Child Health Organization, has been followed in other places besides New York city. In Massachusetts Co-Co has been advertised along similar lines. In Virginia the town of Suffolk has been training its own health clown, a bright school boy who showed aptitude for the impersonation, and it is probable that he will go on the road to other places in the state with his taking health rhymes and attention-compelling merriment.

Active features in the state work against diseases include renewed anti-tuberculosis movements under the care of Miss Agnes D. Randolph, who has returned to the State Board of Health in the position of Director of Educational Work. She has recently been engaged in the work of organizing health work in Texas. The educational division of the Virginia Board is a new department and Miss Randolph will have a field unhampered by custom or tradition.



Wyoming.—Recent appointments in the Wyoming State Board of Health include Dr. Albert B. Tonkin of Cheyenne, to be State Health Officer, to succeed himself; Hazel A. Davis to be Chief Clerk and State Registrar of Vital Statistics; and Dr. C. E. Lane of Riverton, and Dr. W. A. Wyman of Cheyenne to be County Health officer, each in his respective county; and Dr. J. F. O'Donnell of Casper, to be State Venereal Disease Officer.

INDUSTRIAL HYGIENE AND OCCUPATIONAL DISEASE

Abstracted by DRs. E. R. HAYHURST and E. B. STARR.

Cleveland Survey: Health and Industry.

—Detailed consideration of working conditions was not possible in the course of the brief survey, which was without legal authority and dependent upon the courtesy and coöperation of the employers. Information was obtained by questionnaire, by visit and by conference. The great majority of plants employing over five hundred persons were visited; in all about one hundred organizations were studied. The great portion of operatives are employed in a relatively small number of large establishments. About one-half of the industrial workers of the city receive some sort of medical attention in industrial plants. A relatively small amount of time and service is devoted to other than surgical work. There are 95,465 persons employed by 72 organizations with medical services including 93 dispensaries. There were 7 full-time physicians, 62 part-time physicians, 18 physicians on call, 93 trained nurses, 20 practical nurses, and 14 clerks in the personnel of the industrial medical departments. There were a few highly skilled physicians. Visiting nursing was a feature of 22 firms. Such service was of various types, sometimes questionable, and the survey makes certain recommendations: (1) Industrial nurses should be graduate, registered nurses. (2) They should be carefully chosen for professional fitness. (3) Practical, untrained nurses should be employed only under medical or nursing supervision. (4) Certain recommendations as to authority and privileges. (5) Medication by nurses to be prohibited as it is in law. (6) Contact with progressive movements should be encouraged. (7) Visiting nursing should be considered as a normal function of such service. (8) That such visiting nurses should be attached to the medical department and not to the employment department. The report then considers the dispensary equipment, cost of services (\$5 per year per employee, although one establishment stated \$11.23 which is probably not excessive), administrative relations, medical service in mercantile establishments, etc., and service beyond the plant.

There is a full discussion of industrial medical records, and the question of absenteeism. It was found that 11 industrial organizations conducted compulsory physical examinations and rejected applicants on four bases: (1) Communicable disease. (2) Liable to personal injury or harm. (3) A menace to health or safety of fellow workmen. And (4), unreasonable lack of personal cleanliness. There is a comment upon industrial psychiatry, dental service, ocular service, tuberculosis, venereal disease, and rehabilitation of industrial cripples. The small establishment is discussed, also industrial hospitals, special training of industrial physicians and nurses, and the relation to public health authorities. The report ends with a summary of 25 recommendations which should be read in their entirety.—Wade Wright, *Cleveland Hospital and Health Survey*, Vol. 7, pp. 525-556.



Cleveland Survey: Women and Industry.

—The author found that in February, March and April, 1920, 79 establishments, in which most of the women were employed, had a total of 22,906 women of whom 12,613 were in industrial plants, 730 in mercantile establishments, and the balance in public service or public utilities. These women were employed principally in the metal trades, textiles and knitting mills, garment trades, and candy factories. The hours of work, earnings, additional benefits, recreation, vacations, supervision, physical conditions at work, and special features in connection with mercantile establishments, laundries, hotels and restaurants are discussed. The Survey made a record of 980 women who were working on night shifts in 15 Cleveland factories on April 15, two-thirds of whom were in textile and knitting mills and the balance in metal trades. Apparently a limited amount of home work was done. It was found that the day nurseries took care of several hundred children whose mothers were obliged to work. The reports ends with a summary of 12 recommendations.—Marie Wright, *Cleveland Hospital and Health Survey*, Vol. 7, pp. 557-577.

Cleveland Survey: Children and Industry.

—The discussion covers the employment of children between 15 and 18 years of age. At 17 years of age, 75% of the children of Cleveland are already at work. A general statement of the effects of work upon children is followed by a discussion of the law governing the employment of minors and this by a survey of the number employed. The three sources of information on this latter point were surprisingly at variance, as the school census gave 15,846, the Industrial Commission of Ohio 5,029, and the wage survey showed 3,501,—all for the same age group, 15-18, in the year 1919.

Illegal employment of minors was fairly frequent. The largest number of minors are employed in manufacturing—in round numbers, 3,000 boys and 900 girls. It was found that the 8-hour day and 48-hour week were carefully observed. Children work largely in the manufacture of confectionery, hosiery and knit goods, the metal trades, printing and publishing, retail and wholesale trades, and telephone and telegraph work. Educational requirements for this group are not needed except for those in apprentice schools. Employers almost invariably state that the boy of certificate age, that is, 15 to 16, would be better off in school, but opinions differ as to those older. Street trades are next considered with citations of illustrative cases, then agricultural work and domestic services. In Cleveland the industrial establishments play little part in the medical examination of children, as this is done in connection with the Board of Education in its medical inspection of schools. There is a discussion of the sub-normal child in industry and of the standards for physical fitness. A summary of recommendations completes the report.—Florence V. Ball, *Cleveland Hospital and Health Survey*, Vol. 7, pp. 579-621.



Workers' Health Bureau.—This is an eleemosynary organization devoted entirely to planning, installing and supervising health services for Trade Unions. The chief argument is that the Trade Union itself should take up sickness prevention work and health education in an organized manner by which, it is stated, millions of dollars could be saved each year to their own members. The cost would be far less to individual members than it costs them today. The Bureau

is not organized for profit and offers to supplement trade union activities by expert health service at cost. It is organized: (1) To conduct scientific study. (2) To recommend health programs for trade unions. (3) Educational programs. (4) To establish health departments within trade union locals. (5) To train workers' health committees. (6) To select, with scrupulous care, trained doctors, nurses and teachers. The Bureau will send representative educational leaflets and a description of its service upon request.—*Workers' Health Bureau*, New York City.



Physical Standards for Working Children.

—This is a preliminary report of the Committee appointed by the U. S. Children's Bureau to formulate standards of normal development and sound health for the use of physicians in examining children entering employment and children at work. The report discusses the types of legislation governing the employment of minors in various states and the general standards of administration. It then lays down ten standards as follows: That (1) the minimum age of entering industry be not younger than 16 years; (2) children who are not of normal development for their age should not be employed; (3) thorough physical examinations for entering such children should be made by properly constituted medical officers, keeping in mind the specific occupation sought; (4) reexaminations for children changing occupations should be made; (5) periodical reexaminations for all working children should be made at least once yearly; (6) there should be centralized control of such examinations; (7) the desirability of physical examinations of children during school and preschool periods is recommended; (8) the effects of occupation on employed children should be studied; (9) authoritative scientific investigations should be made covering a list of 8 subjects suggested; (10) certain minimum standards should now be adopted as the results of scientific research already performed. The balance of the report is a detailed discussion of these minimum standards of physical fitness. There is an insert illustrating the record form to be used for the physical examinations.—Children's Bureau, U. S. Dept. of Labor, *Publication No. 79*, Washington, D. C.

PUBLIC HEALTH LABORATORY NOTES

Abstracted by ARTHUR LEDERER, M. D.

The Optimum Hydrogen-Ion Concentration for the Growth of *B. Typhosus*, and *B. Paratyphosus* A and B.—*B. typhosus* has a range of growth from pH + 5.0 to pH + 8.6 with an optimum growth at pH + 6.8—pH + 7.0 in a salt-free veal infusion broth. Above or below these limits the resulting growth in comparison is very slight. Large variations in the H-ion concentration near the optimum zone produce only slight effects on the growth of the organisms, while slight variations at the limiting zone produce a marked effect. These observations are fully in accord with the results reported by Cohen and Clark in their studies on the growth of certain intestinal organisms at different concentrations. In the region near the optimum H-ion concentration the tolerance for alkali seems to be slightly greater than for acid. Stock cultures isolated from stools, blood and urine of typhoid patients or carriers have a more decided optimum than recently isolated cultures of similar cases. In such cultures the plateau of the growth curve is much more pronounced and extends over a wider range than in stock cultures. The latter is suggestive of microbic adaptation to changes in H-ion concentration in body fluids, particularly urine and bile. *B. paratyphosus* A and B have a range of growth at varying H-ion concentrations similar to that of *B. typhosus* but exhibit a greater tolerance for alkali than *B. typhosus*.—P. Schoenholz and K. F. Meyer, *Jour. Inf. Dis.*, 28, 384 (1921).



Albumin in Sputum Aid in Early Diagnosis of Pulmonary Tuberculosis.—Experience has convinced the author that the qualitative and quantitative examination of the sputum for albumin is an easy and useful method of arriving at a diagnosis in the earlier stages of pulmonary tuberculosis, and might with advantage be employed not only by the specialist but also by the busy general practitioner. The presence of albumin in the sputum is an indication of active disease of the lung tissue itself. If the bronchi alone are affected, the amount of albumin present, if any, will be

negligible. If other inflammatory diseases of the lungs are excluded, all patients with 0.2% or more of albumin in the sputum may be regarded as suffering from active pulmonary tuberculosis. Used in conjunction with diagnostic subcutaneous injections of a reliable tuberculin, the albumin test is a means of distinguishing between active and inactive tuberculosis. If the reaction is positive, the disease is active; if negative, the condition is latent.—A. C. Alport, *South African Med. Rec.*, 19, 127 (1921); *Jour. A. M. A.*, 76, 1615 (1921).



Classification of Streptococci from Normal and Pathogenic Throats, Also from Wounds.—The hemolytic and nonhemolytic streptococci found in normal and pathogenic throats were of the same varieties, when classified by Holman's sugar fermentation tests, Avery and Cullen's final hydrogen-ion concentration and their action on brom-cresol-purple and methylene blue milks. In many cases of infected wounds, particularly those of the head and upper extremity, the same strains of streptococci were found in the throat and the wound.—Lloyd Arnold, *Jour. Lab. Clin. Med.*, 6, 312 (1921).



Variation in Typhoid Bacilli.—The variations which may occur in the characteristics of typical typhoid bacilli in regard to their abilities to utilize carbohydrates, and their behavior to serum antibodies under various conditions of cultivation were investigated by the author. One hundred and thirty-eight cultures which had been carried on artificial mediums since their isolation from patients were employed. Concerning the question whether certain of the variations from the normal type noted represent true mutations in the sense of de Vries, the author believes that this term, which defined changes of a definite character occurring in higher plants should not be introduced into bacteriology. All the alterations brought about by artificial environment in the typhoid bacillus were rapidly lost when the organisms were returned to the environ-

ments prevailing under the usual cultural conditions and in the case of the inagglutinable strains, even in the course of persistent abnormal environment, the changes observed should properly be regarded as variants and cannot be spoken of with accuracy as mutations in the sense of de Vries.—K. I. Morishima, *Jour. Bact.*, 6, 275 (1921); *Jour. A. M. A.*, 77, 67 (1921).



System of Laboratory Examinations and Records.—The system of making and filing requests and reports for laboratory examinations has been gradually constructed and found uniformly satisfactory in the wards and dispensaries of the Polyclinic and Medico-Chirurgical hospitals of the Graduate School of Medicine of the University of Pennsylvania. The problem of constructing an efficient system is frequently troublesome and probably no single system will meet all conditions in individual institutions. The system described has met all essential requirements and can be readily modified if necessary to suit individual conditions.—John A. Kolmer, *Jour. Lab. Clin. Med.*, 6, 505 (1921).



Antipneumococcus Protective Substances in Normal Chicken Serum.—It has been shown that the serum of normal chickens is capable of protecting mice and guinea pigs against infection with pneumococci. The protective substances are found in the water-insoluble fraction of the serum globulin. There are, in chicken serum, particular protective substances for each serological type of pneumococcus. These substances are selectively removed from the serum by the process of bacterial adsorption. In terms of the protective substances in chicken serum, Types IIA and IIB pneumococci constitute two distinct main groups and Type II strains form a subgroup to both of them.—Carroll G. Bull and Clara M. McKee, *Am. Jour. Hyg.*, 1, 284 (1921).



Toxic Substance Obtained by Growing Hemolytic Streptococci in a Special Medium.—A special medium is described in which a specific toxic substance has been produced during the growth of certain strains of hemolytic streptococci. This toxic product is filtrable and the filtrates have a definite pathogenic action when injected

into mice, rabbits and guinea pigs. The poison possesses definite antigenic properties and the sera of rabbits immunized with such toxic filtrates gives protection both against infection with the cultures and against intoxication with the filtrates.—Leon C. Havens and Margaret L. Taylor, *Am. Jour. Hyg.*, 1, 311 (1921).



Chemical Criteria of Anaërobiosis with Special Reference to Methylene Blue.—Various methods of anaërobiosis are viewed critically in the light of experimental tests with carefully balanced solutions of alkaline glucose methylene blue in comparison with cultural tests with *B. Welchii*, *B. tetani*, *B. botulinus*, and other obligate anaërobes. A detailed study of the decolorization of methylene blue by plant and animal tissues is described, showing the important role of absorption as a means of decolorization by these and other porous substances. The extraction from plant and animal tissues of reducing substances for methylene blue, active in alkaline solution, is described. The efficacy of deep culture methods for anaërobes is shown while the inefficacy of insoluble liquid seals is contrasted with the reliability of semi-solid waxes and greases, and that of mechanical seals. The shortcomings of certain methods of surface culture of obligative anaërobes are exposed and the value of a modification of Wright's method upheld by these studies. Finally, the desirability is indicated of determining exactly to what degree of oxygen tension reduction the decolorization of methylene blue corresponds, and whether decolorization occurs at a definite hydrogen-ion concentration irrespective of the sugar content of the solution.—Ivan C. Hall, *Jour. Bact.*, 6, 1 (1921).



Solid Culture Media with a Wide Range of Hydrogen or Hydroxyl Ion Concentration.—Agar or gelatin media, if cooled before being made acid or alkaline, will jellyify at limits far beyond pH concentrations tolerated by microorganisms. They may be manipulated so as to avoid contamination during adjustment of reaction and need not be subsequently sterilized.—Frederick A. Wolf and I. V. Shunk, *Jour. Bact.*, 6, 325 (1921).

LES COMMANDEMENTS DE LA SANTÉ



1.

Je m'engage à essayer



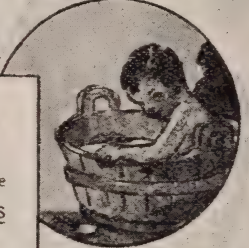
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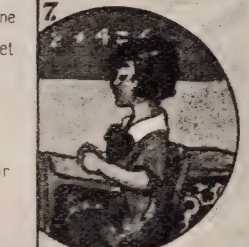
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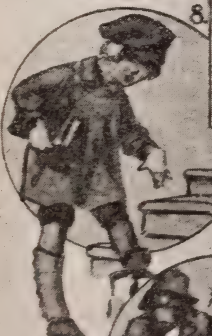
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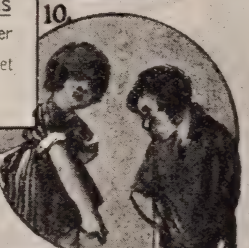
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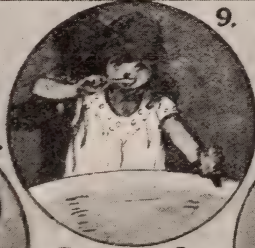
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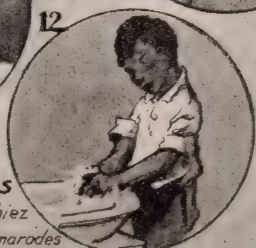
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12.

- 1^{er} De respirer de l'air frais partout où je travaille et joue
- 2nd De rester au grand air autant que possible
- 3^e De dormir avec les fenêtres ouvertes
- 4^e De respirer par le nez et non par la bouche
- 5^e De prendre un bain au moins une fois par semaine
- 6^e De conserver mes vêtements propres et bien tenus
- 7^e De me tenir toujours droit à l'école
- 8^e De ne salir ni ma classe ni ma maison
- 9^e De me brosser les dents surtout le soir avant d'aller me coucher
- 10^e De ne pas cracher par terre
- 11^e De ne pas porter à la bouche les objets sur lesquels la salive des autres a pu se poser
- 12^e De me laver les mains avant les repas et en sortant des W.C.

*Lisez-les
tous les jours*

*jusqu'à ce que vous les sachiez
par cœur et apprenez-les à vos camarades*

Commission Américaine contre la Tuberculose - 3 rue de Berri - Paris

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SCHOOL HEALTH SERVICE IN NEW YORK STATE

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President of the American School Hygiene Association

Read before the National Education Association at Des Moines, Iowa, July 5, 1921.

That normal wisdom is the result of normal health, physical and mental, is the basic principle of the program of health education in the schools of New York State as here outlined. The aim of course is the formation and development by children of automatic good-health habits, as well as the stimulation of normal play. The program provides for giving school credit for health improvement as well as for mental progress. Emphasis is laid upon the need of adequately trained teachers of physical education; the education of the community to assume its own responsibility for efficient administration; and the stimulation of executives and legislators to grant necessary appropriations.

"**F**IRST Health, Then Wisdom" is one of the mottoes of the State Department of Education. We believe that normal health is essential to normal wisdom, that physical fitness and mental fitness should go hand in hand in our educational program, that in our school health service health training should articulate and correlate closely with mental training, that as all knowledge is valuable only as it can be used in a practical and beneficial manner, so must health knowledge be so applied to our daily lives that health habits will become automatic.

Except in the control of communicable diseases, a function of the health authorities' school health service should include all of the activities in the public schools in the state having for their purpose the conservation and improvement of the physical fitness of all teachers, of all

pupils and of all school attaches, and the establishment and maintenance of modern sanitary conditions of school buildings and school premises. School health service is mostly a matter of education, a problem of training in practical or applied hygiene and in sanitation. It also involves school organization and school administration. Many activities must of necessity unite in its proper organization and efficient administration. It must be made a daily part of the educational system of the state and of the community. While central supervision is essential for its standardization and guidance, every community must be made to realize and assume its own responsibility of efficient administration. As being conducted at present our school health service in New York State might well be classified under the following subdivisions:

1. School buildings and grounds.
2. Physical education.
3. Mental hygiene and diagnosis.
4. Oral hygiene.
5. Nutrition.
6. School nursing.
7. Medical inspection in schools.
8. Health education and health training.

The general administration of all these health activities in the public schools in the state is under the state commissioner of education. The third assistant commissioner of education for elementary schools is charged by the state commissioner of education with the more direct supervision of the work. Each subdivision of work is administered by a specialist appointed for that purpose by the State Board of Regents upon recommendation of the commissioner of education. The specialist in each line is held responsible for the administration of the work entrusted to his or to her direction. There is no part of the health service that does not come into cooperative articulation with every other part of the general health program. This is true in our work in the department and in the field. This plan of correlation or articulation of health activities is being adopted in many sections of the state. In several cities the board of education has established a department of school health service in which all health activities in the schools are brought into effective cooperative relation. In many places the medical inspector, the physical director and the school nurse unite their efforts in dealing successfully with postural defects. In other places we find the school physician, the dentist, the nurse and the nutrition expert dealing jointly and successfully with cases needing the combined attention of this group of specialists. Again the psychiatrist and psychologist are aided by the school medical inspector, in an intensive physical examination to eliminate, if possible, physical defects that might contribute to mental retardation. Many cases also arise where our team work is of material assistance to the Division of School

buildings and Grounds in improving sanitary conditions.

The State Medical Library, assisted by our staff of health directors, has recently compiled its second edition of a twenty-page bulletin or bibliography of "Books on Health Work in Schools." This bibliography covers every phase of our school health service. The books are furnished free to all people doing health work in the public schools in the state.

In the rapidly expanding program of health education and health training, the entire force of health workers plays an important part. In short, no part of our health program can function successfully by itself. Every phase of the work is but an integral part of the general program of school health service.

In all matters pertaining to the recognition and control of communicable diseases among school children we enjoy the closest cooperation with the health authorities of the state. An excellent bulletin on "Cooperation in the Control of Communicable Diseases among School Children," prepared by the State Department of Health, furnishes to the school authorities definite and practical instructions that are followed closely and with good results.

While adequate funds are not as yet available with which to administer properly our comprehensive health program in the State Department of Education, material progress is being made along definite lines for the improvement of health and sanitation in our schools.

1. SCHOOL BUILDINGS AND GROUNDS

This division, as its name implies, has supervision of school buildings and grounds, of which there are more than 11,000 in the state. Except in first and second-class cities all plans for the construction of new buildings and the alteration of old ones must be submitted to the director of this division for his examination, and must be approved by the department before construction or alteration can go forward. Matters pertaining to heating, lighting, plumbing,

ventilating, seating, cleaning and school grounds come under the direction of this division. During the past school year plans have been submitted to the department for the expenditure of nearly \$100,000,000 for the erection of new buildings and the alteration of old ones. While this division is rendering most valuable service to the state, it is greatly in need of further state assistance with which to increase the personnel of its staff.

Much progress has been made during the past three years in improving toilet facilities in our rural schools. Several thousand of the old insanitary and objectionable outhouses have been replaced by chemical toilets attached to and made a part of the school building. Though considerable objection has been raised to this movement in some of the rural districts we expect in time to be able to abolish all outside toilets in our rural schools and to replace them with modern sanitary accommodations.

Many of us have failed to appreciate fully the close etiological relation existing between school building conditions and the mental and physical fitness of teachers and of pupils. Many of the acquired physical defects of teachers and of school children, and much of the inefficiency of teachers and of the mental retardation of children are due to conditions existing in our school buildings. More and better attention must be given to this feature of health work in schools to the end that conditions harmful to health or contributory to retardation may be reduced to a minimum. Bright, cheerful, sanitary school buildings and grounds are powerful contributory factors to the health and mental efficiency of both teachers and pupils.

2. PHYSICAL EDUCATION

Our Physical Education Law was enacted by the Legislature of 1916. It provided that all pupils above eight years of age in all elementary and secondary schools shall receive a certain

amount of attention in physical education (not less than twenty minutes in each school day) in ways to be specified by the State Board of Regents.

A comprehensive course of instruction was adopted by the Regents and has been in operation during the past four years. A new syllabus in physical education has been prepared and is about to be distributed with the approval of the Board of Regents. This revised syllabus will place less emphasis upon formal athletics and more upon the formation of correct health habits and recreation. The application of a state program of physical education to all the pupils in the schools of the state is no small undertaking. I believe, however, that during the four years that our program has been in operation much of the original antagonism to the introduction of this subject, particularly in the rural schools, has been allayed.

The state pays one-half of the salary up to \$1,200 of special teachers in physical training. The law first provided that physical training teachers or physical training supervisors should be employed in all elementary and secondary schools. This was amended in 1918 to exempt schools with less than ten teachers. The law was again amended in 1921 to exempt schools with less than twenty teachers. The Legislature of 1921 in its economy program failed to appropriate funds for the employment of eighteen state supervising experts in physical education. The Legislature, however, recognized the health value of physical education, sustained the principle that it shall be taught in all of our schools, and made provision by which the excellent work will go forward. More of the responsibility of carrying on the work will hereafter be placed on local school authorities and less of state supervision will be available.

Two state-wide physical fitness tests have recently been conducted under the supervision of the director of the Division of Physical Education. Much en-

thusiasm was aroused in these tests and many excellent results were accomplished. Many of our 900 physical directors in the state have taken an active part, and have been particularly successful in organizing health clubs in schools.

Physical education indeed has come to stay. It has become an indispensable part of the health program in schools. It has been one of the greatest health stimulants in years to both teachers and to pupils. It has furnished to school health work much of the zeal, energy and enthusiasm so much needed. It has contributed to the physical, mental and moral welfare of the children of the state. It has emphasized health habits and stimulated natural play. It has stressed the health value of fresh air in the schools and in the home. It has so fully demonstrated its practical value in schools that its influences are felt today among thousands of our adult citizens. When properly articulated with the general health program in the schools it is sure to continue as a most potent contributor to both mental and physical fitness.

3. MENTAL HYGIENE AND DIAGNOSIS

An important part of school health service is the work of the Division of Mental Hygiene and Diagnosis.

The advantages and, in fact, the necessity of determining individual mental differences and intelligence levels are gaining wide appreciation and support. No program of health education or medical service in the schools is complete without adequate psychiatric and psychologic examinations.

The early recognition of pathological deviating types in the schools is of supreme importance in preventive medicine. This, however, is only part of the work of mental hygiene and diagnosis. The examination of the great group of retardation unfolds individual problems in single or combined disabilities or defects and points the way to educational treatment and vocational guidance.

The work of this division is closely allied to that of the Division of Educa-

tional Measurements. These two services often combine in group-testing surveys. The follow-up individual examinations of those obtaining low scores is carried on by the Division of Mental Hygiene and Diagnosis.

The organization and supervision of the special class for backward or mentally deficient children is a part of the work of the Division of Mental Hygiene and Diagnosis. There are at present about 450 such classes in the state enrolling about 7,000 pupils. About 275 of these classes are in greater New York, while 175 are in other parts of the state. A number of other cities are organizing special classes, and within the next few years it is expected that all the larger localities will be equipped with special classes. It is a part of the system of the State Department to receive summaries of the examination and findings of each child in a special class. These summaries followed up will furnish valuable data concerning the children who find their way into the classes and will guide the course of the work itself.

This work closely correlates with school medical inspection. In reality, the two can not be separated, as subnormalities are very frequently associated with or resultant from physical defects.

The central office personnel of the division consists of one psychiatrist, one psychologist, and one supervisor of special classes. A larger personnel is needed to meet the demands made upon the services of this force. Close coordination with the traveling clinics of the State Commission for Mental Defectives is effected, but the major portion of the work of mental measurements and diagnosis is necessarily done within the school system.

A much greater future awaits this branch of school health service, not only in further development along lines already indicated, but in mental prophylaxis or individual and group mental hygiene in a more general use of the

term. The value to the commonwealth through this sociologic application of mental hygiene is far-reaching.

4. ORAL HYGIENE

As a state school health endeavor, all work in this line is conducted through the Department of Education under the direction of a full-time oral hygiene inspector. At the present time about fifty cities and villages have established some form of dental service for school children. All degrees of service are offered, ranging from a mere examination and recommendation to the parents that corrections be made, to the most complete dental restorations and oral surgical operations. A number of schools have very complete dental equipments installed with a dentist on part or full-time service. In such clinics all emergency work is cared for. Some do gratuitous reparative work only for the really needy, while others make a small charge. About 400 dentists throughout the state have designated Children's Service Hours, when free or nearly free service is rendered in their offices to deserving cases. The great scarcity of dentists available for oral hygiene as well as the inadvisability of depending upon corrective measures is being successfully met in a few localities by the employment of dental hygienists. These young women trained in oral hygiene systematically clean the teeth of the children once or twice each year, carefully chart dental defects found and instruct the pupils in dental cleanliness. Badly neglected cases are often followed to the home where further instruction is given to parents who are frequently induced to give proper attention to existing dental defects. Dental hygienists are also qualified to carry on an important part of the health educational work by personal talks to teachers and to pupils, by schoolroom lectures, by toothbrush drills and by demonstrations. This phase of our work is growing rapidly in favor and will in time prove of even greater assistance in dealing with

the great problem of dental health. The hygienist is also of material assistance in the spreading of knowledge of cause and effect, and the real benefits of preventive dental measures. She assists in placing the responsibility of prevention and correction of defects and the maintenance of oral cleanliness where it rightfully belongs, in the home. Like the school nurse, she does much to bring the school and the home into closer co-operative relation with each other.

In some of the larger places, especially where a considerable percentage of more or less dependent children attend school, the combined services of dentist and hygienist are securing splendid results.

Several counties of the state are providing dental education and care for their smaller rural districts by means of a mobile dental outfit. This is equipped with one or more dentists and hygienists who go from place to place giving such services as seem advisable.

In all of this work the department aims to assist and advise in every way possible. Standard examination blanks, record forms, educational literature and stereopticon slides are available from the State Department of Education. Lectures are given to the normal schools and to teachers' conferences. Members of the Oral Hygiene Committee of the State Dental Society have given many of these lectures and have coöperated with us in many ways in our oral hygiene work in schools. This coöperative activity among dentists, dental societies and school authorities is indispensable to accomplish the best results.

5. NUTRITION

The aim of our nutrition program is two-fold; first, educational, and second, corrective.

A. Educational—the elaboration of a graded course of study in nutrition so that every child will know what his food requirements are. In the early years when habit formation is taking place, the instruction will be concrete and capable of easy personal application. The

child will be taught his food requirements, not in terms of protein, fat and carbohydrate, but in terms of milk, cereal, vegetables, etc. In the later years he will study the quantitative aspects of nutrition. He will know his own calorie requirement and the calorie value of the common foods; he will be familiar with the protein and mineral content of foods and be taught the importance of vitamins. The conservation of digestion will be frequently emphasized. The purpose of the elementary course is to establish good dietary habits. The imparting of knowledge is only the initial means to the end.

In the high school the increased food requirements during adolescence will be taught so that during this time of rapid growth and development the body-building foods may be freely supplied. Our instruction, however, must not stop here. Boys and girls must be taught what their food requirements will be when they are men and women so that they will be able to exercise an intelligent choice of food under varying economic, climatic and social conditions. This course of study and the preparation of teachers to present it, we regard as a basic part of our nutrition and health program.

The course of study for all grades, including the high school, has been completed. The lessons in nutrition for the first six years have been already incorporated in the "Health Education Syllabus" which the State Education Department is preparing. When the individual teacher is trained to present this subject successfully, when the children translate their instruction in food requirements into good dietary habits, then we may confidently expect a reduction in the prevailing percentage of undernourished children.

Children really are interested in their own health, especially when it may be measured in concrete terms. As a child's weight is a practical index to his nutritional condition, it is very desirable that children be weighed frequently and that their weight be recorded. Three

years ago the Federal Bureau of Education gave a great impetus to this movement by sending to every schoolhouse in the United States a classroom weight chart containing spaces for recording the children's names, ages, heights, normal weights and actual weights, month by month. In the State Department of Education we recommended that every schoolhouse be equipped with scales. To this recommendation there has been a most gratifying response. Reports made for the year 1919-20 indicate that only five cities and eleven villages have no scales.

When children are unable to return home for the noon meal, it is desirable that a nutritious lunch be available at school. The lunch is sold to the children at cost. In large cities, a lunch room manager is made responsible for the lunchroom. In smaller communities the home economics class prepares the school lunch. In the rural schools a simple hot dish, such as a cup of cocoa or a cup of soup, is prepared to supplement the box lunch brought by the children from home. The school lunch, especially in the rural communities, has had a rapid development in our State during the past few years. It has been the means of teaching many children to like nutritious dishes and has much educational value.

B. Corrective. Several rather extensive and conclusive surveys made in New York State indicate that 20% or more of our school children are 10% or more underweight. As such undernourished children need additional food it is very desirable that a mid-morning and a mid-afternoon feeding of a cup of milk and a whole grain cracker be supplied. The mid-afternoon feeding may be taken at home. The mid-morning feeding can not possibly be taken at home as the child is in school. Therefore, we have recommended that for the undernourished children, a mid-morning feeding of milk and crackers be available at school. In cities and villages the milk is delivered to the schoolhouse in

half-pint sealed bottles and the children sip the milk from the bottles through straws. The children who can afford to pay for the milk should do so. For the children who need the milk and can not afford to pay for it, funds can usually be secured from some outside organization, such as the Parent-Teachers Association and Mothers' Clubs. The milk feeding at school has been the means of teaching many children to like milk who formerly refused to drink it. In some cities nearly 75 per cent of the pupils have indicated their fondness for milk. In our state the milk feeding has been organized in twenty-eight cities and sixteen villages. These are very conservative figures. This year's report will indicate many more. In the rural schools the undernourished children are urged to bring an extra bottle of milk from home for the mid-morning feeding.

There will always be, however, a number of undernourished children whose physical condition needs special attention. Among many children who fail to gain weight are those handicapped by some physical defect. Very frequently adenoids and enlarged, diseased tonsils are the reason; sometimes the cause is less obvious and lies in some pathological or functional condition. A thorough examination by a competent physician and the correction of the physical defects found are a prerequisite to all attempts to improve the nutritional conditions of the children. Sometimes a child who fails to gain in weight may present no indications of disease but may simply be suffering from fatigue. Young children often do not know when they are tired; they play almost to the point of exhaustion. For such children a daily rest period will often prove very beneficial. When children are found to be 10 per cent or more underweight, inquiry into their dietary habits should be made. In this way one often discovers sufficient reason for failure to gain. The practice of taking tea or coffee at every meal and a pernicious use of candy and sweets are

habits already established in many young children. On the other hand, a failure to make milk, cereals and vegetables a part of their daily fare is a characteristic equally prominent. Didactic instruction will accomplish little here. A method has been formulated, however, which has been demonstrated to be very effective in reforming the child's bad living habits. Organize these undernourished children into competing groups; tell each one what he ought to weigh and what he must do to reach normal weight; weigh the children weekly, and make a weight curve for each child; give some recognition, however slight (a gold star pasted on the chart), to the one who gains the most, and you have created in the children a powerful stimulus to change their ways of living in order that they may attain normal weight. This method is known as the "Nutrition Class Method." Nutrition classes for the undernourished children have been organized in a number of schools throughout the state.

A well-trained supervisor of nutrition is needed in every community. She should be a member of the school staff and work with physician, nurse, teacher and parent, to insure for all the children a well-nourished and therefore a well-built body structure.

6. SCHOOL NURSING.

There are approximately 250 school nurses under the general supervision of the state supervising nurse. These nurses are devoting their full time to health work in schools. There are nearly 500 other nurses in the state who are doing some health work in schools. When so engaged they are under the direction of the school authorities and submit regular reports to them. Five years ago there were 100 school nurses in the state exclusive of cities of the first class. About 40 of our school nurses are employed in districts with a population of less than 4,500.

Sixteen nurses are doing both school nursing and physical training in rural

communities. In these cases special preparation in physical training is required of the registered nurse, to whom a temporary certificate is issued by the department. When thus qualified to do the combined work the district employing such a nurse-physical trainer is entitled to a portion of the quota paid by the state toward the salary of a physical trainer.

All school nurses in New York State are required to be registered. It is desirable that they should have special training in public health and school administration. Definite instructions are issued to them as to their duties. They are expected to serve under the direction of the school medical inspector. They are required to submit monthly reports of their services and results obtained to the district or districts employing them. A standard form is used for this purpose.

As the services of the school nurse are largely educational, we advise boards of education to employ full-time nurses in districts having 1,000 or more children in attendance. In a community of this size there should be a full-time public health nurse and a full-time school nurse. They should assist each other in every possible manner and there will be plenty of work to keep both of them busy. By such a plan far better results will be accomplished in all forms of health work in the community.

Where only one nurse is available for all forms of health work it is essential that all of her services relating to the schools shall be under the direction of the school authorities, to whom she must submit her reports. In such cases of divided services it is equally as essential that she be under the direction of and responsible to the other agencies uniting in her employment while she is doing other than school work.

Health work in schools would be a failure in most communities without the services of the school nurse, as no attention would otherwise be given to the details so essential to the success of the

work. In her work in the schools she coöperates with parents, teachers, medical inspectors, physical directors, physicians, dentists and others in the community interested in the health of children.

Her greatest opportunities for success in school health service lie in her ability to give individual attention to children with physical defects, to see that proper attention is given to such defects, and to give much of the health instruction to teachers and to pupils. To be most successful she must be tactful, intelligent, observant, coöperative and thoroughly interested in her work.

The State Board of Regents has recently established certain qualifications by which registered nurses may become health teachers. These qualifications in brief are as follows:

(a) Credentials showing completion of an approved four-year high school course.

(b) Registration as registered nurse in New York State.

(c) Credentials showing the completion of at least six semester hours in physical education or general public health service.

It is expected that our school nurses will rapidly become health teachers. They will then become a definite part of the teaching forces of the districts in which they are employed. One hundred and forty-two, or more than half, have already qualified in this respect. This plan of making our school nurses health teachers will insure to us better educated and better qualified health instructors in the future. Districts that employ nurses qualified as health teachers will receive the regular state quota toward the salary of a grade teacher.

7. MEDICAL INSPECTION IN SCHOOLS.

So far as I know, the Legislature of 1913 passed the first statewide mandatory school medical inspection measure in this country. The State Commissioner of Education and the State Commissioner of Health united in recommending the

passage of the bill. It does not apply, however, to New York City, Buffalo and Rochester, or to private and parochial schools. About 700,000 pupils, 37,000 teachers and more than 11,000 school buildings come under its provisions. No funds were available for its enforcement during the first year, and the state medical inspector of schools did not begin its administration until February 1, 1915. The law provides in brief as follows:

A. That a school medical inspector shall be appointed in every school district in the state.

We have at present a card index of about 1,500 physicians who have been appointed thus far as school medical inspectors. Full-time inspectors are employed in Albany, Amsterdam, Lockport and Poughkeepsie. In several of our second-class cities six part-time school medical inspectors are employed. The salary paid is based upon time devoted to the service. The department issues a bulletin on "School Health Service and the Medical Inspection Law," in which directions are given to school medical inspectors as to their duties. In rural communities physicians are paid from fifty cents to \$1.25 for each examination. I believe better results are obtainable with one full-time school medical inspector and such special assistants on part time as might be needed. The chief medical inspector should be made responsible for the proper organization and administration of the work.

B. That school nurses and other experts in health service may be employed.

Under this provision school dentists, dental hygienists, health teachers, nutrition experts and others are also employed.

C. That every pupil on admission to school or thirty days thereafter shall furnish a health certificate each year.

During the past four years 1,753,430 physical examinations have been made by physicians in the state and health certificates issued. Our standard health certificate is urged for general use throughout the state.

D. That the local school medical inspector shall examine all pupils who fail to furnish a health certificate.

More and more of the physical examinations are being made by the school medical inspectors. Parents in general now wish this to be done.

E. That the school medical inspector can make such examinations of teachers, janitors and school buildings as in his opinion the protection of the pupils and teachers may require.

Many teachers did not take kindly to these examinations at first. Their opposition is rapidly disappearing as they are beginning to realize the importance of their own health as well as that of the pupils. Reports on school buildings are transmitted at once to the Division of School Building and Grounds.

F. That parents shall be notified of defects found and urged to have them corrected.

In our best organized systems a printed notice is first sent home by the pupil. In case the defect is not corrected in thirty days or less the school nurse visits the home. Our corrective work is increasing rapidly. Forty-two thousand, three hundred seventy-seven more corrections were reported to us during the school year 1919-20 than during the preceding year. This is an increase of 42.7 per cent in corrective work in one year.

G. That where parents are unable or unwilling to give proper attention to defects found the medical inspector shall see that proper treatment is given at the expense of the district.

We do not find it necessary to resort to this provision of the law in many cases. There is an increasing desire on the part of parents, especially the better class, to see that their children are in good health and in proper physical condition. We regard it as important that parents shall assume the financial responsibility of putting and keeping their children in proper physical condition for school.

H. That special attention shall be given

to the eyes and ears of school children under a coöperative plan of the State Department of Health and the State Department of Education.

A bulletin on "The Eyes and Ears of School Children" is issued by the State Department of Education and distributed freely among teachers and health workers. Simple rules for care and use of the eyes are printed in suitable form to paste on the inside of the front cover of one text-book of each pupil.

I. That pupils giving symptoms of any communicable disease shall be sent home at once and the health officer notified.

An excellent system of coöperating for the control of communicable diseases among school children has been worked out and is in effective operation between the State Department of Health and the State Department of Education. A special bulletin and various forms are used in this plan.

J. That the state commissioner of education may in his discretion withhold the public money from a district which wilfully refuses or neglects to enforce the law or to comply with the rules and regulations for its enforcement.

This we have not done except in flagrant cases of violation of the law. We have thought best to induce rather than to force people to enforce the law and its provisions. You can lead them in the work far better and more successfully than you can drive them.

K. That the state commissioner of education shall appoint a state medical inspector of schools who under the supervision of the commissioner of education shall perform such duties as may be required to carry out the purposes of the law.

This appointment was made on February 1, 1915.

L. That the state commissioner of education shall enforce the provisions of the law. That after consultation with the state commissioner of health he may adopt certain rules and regulations to

carry into full effect the objects and intent of the law.

It is a wise provision to place the administration of this health work in schools in the hands of the commissioner of education. One department can not successfully administer activities that are carried on in the field of another department. Divided responsibility of administration creates confusion, leads to misunderstandings and lessens efficiency. There is plenty for each department to do. It is wise, however, that provision is made for consultation and coöperation with the health authorities as such is essential for the success of both departments.

The following staff is now available with which to carry on the work in the department:

- State medical inspector of schools.
- Assistant state medical inspector of schools (man).
- Assistant state medical inspector of schools (woman).
- State supervising nurse.
- State supervisor of nutrition.
- State oral hygiene inspector.
- Instructor in hygiene.

Upon recommendation of the state medical inspector of schools and approved by the commissioner of education, provision was made in 1918 for a mental diagnostician who has charge of the Division of Mental Hygiene and Diagnosis. This work as elsewhere described is in close coöperation with the Division of Medical Inspection.

Some results accomplished through medical inspection in schools during the past four years are shown in the following table:

Total number of physical examinations made	1,753,430
These were made as follows:	
In cities and large villages.....	896,907
In rural schools.....	856,523
Percentage of registered pupils examined:	
In large cities and large villages.....	73.7
In rural schools.....	79.3

Average	76.5
Total number of defects found.....	1,393,888

These were as follows:

In cities and large villages.....	645,663
In rural schools.....	748,225
102,562 more physical defects were found among rural children than among those in cities.	

The ratio of frequency of defects found to the number of examinations made was as follows:

In cities and large villages.....	.72
In rural schools.....	.87
Total number of defects corrected...	410,160

These were as follows:

In city and large village schools.....	239,347
In rural schools.....	170,813

Percentage of defects treated during past four years:

In city and large village schools.....	37.0
In rural schools.....	22.8

14.2 per cent more of the physical defects found among school children were treated or corrected in the cities than in the rural sections.

An analysis of some of these results, with comments, might be of interest.

Defective Vision

Total number of children found with defective vision	141,574
Total number of children treated for defective vision	54,461
Total number of children with defective vision still needing attention...	87,113
Percentage of children with defective vision treated	38.5
Percentage of children with defective vision not treated.....	61.5

Many of these children are seriously handicapped in their school work. Some had been placed in classes for retarded children. A child who does not see normally can not be expected to do normal work in school. Many of the neuroses or nervous conditions found among school children are due to abnormal conditions of the eyes.

Defective Hearing

Total number of children found with defective hearing	29,216
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Total number of children treated for defective hearing	7,180
Total number of children with defective hearing still needing attention..	22,036
Percentage of cases treated.....	24.6
Percentage of cases not treated.....	75.4

Deafness is generally acquired and not inherited. It is most often due to conditions which if recognized early and properly treated could be easily remedied. It is often insidious in its incipency and progressive in its course. Our institutions for the deaf are filled today with children who first lost their hearing and then their speech. Hundreds of our children with partial deafness today will be totally deaf in adult life unless they receive proper corrective treatment.

Defective Nasal Breathing

Total number of children reported with defective nasal breathing.....	119,174
Total number of children with defective nasal breathing treated.....	20,644
Total number of children with defective nasal breathing not treated....	98,530
Percentage of children with defective nasal breathing treated.....	17.3
Percentage of children with defective nasal breathing not treated....	82.7

This condition is due in most cases, as we know, to an excessive growth of adenoidal tissue. Greatly enlarged tonsils, nasal polypi and abnormal conditions of the nasal septum are also often contributing factors. With these conditions, as with most physical defects, early recognition and proper treatment are essential for successful control.

Hypertrophied or Diseased Tonsils

Total number of children reported with hypertrophied or diseased tonsils	309,510
Total number of cases of hypertrophied or diseased tonsils treated	38,779
Total number of cases of hypertrophied or diseased tonsils not treated	270,731
Percentage of cases of hypertrophied or diseased tonsils treated.....	12.5
Percentage of cases of hypertrophied or diseased tonsils not treated....	87.5

It is becoming more and more evident to me that greater attention must be given to diseased tonsils. I am also of the conservative opinion that operative treatment is needlessly resorted to in many moderately enlarged tonsils. It is the diseased and obstructing tonsils that should demand our closest attention.

Comparatively little is being done to deal successfully with the above four conditions that contribute so materially and so frequently to physical defects among school children. The eyes, and ears, nose and throat form a region in which many of the most serious physical defects are found and for which far more could and should be done. Our medical and educational authorities should be stimulated along these lines.

Defective Teeth

Total number of dental defects reported	558,362
Total number of dental defects treated	180,636
Total number of dental defects not treated	377,726
Percentage of dental defects treated.	32.4
Percentage of dental defects not treated	67.6

Dental conditions are responsible for much ill health and retardation in school. They are the most frequent physical defects found among school children. They are among our most difficult problems in school health service. To deal with them successfully will require systematic instruction in mouth hygiene in our schools. With these as with most of the physical defects among school children our greatest opportunity is found in prevention rather than in correction.

Defective Heart

Total number of children reported with defective heart.....	18,629
Total number of children treated for defective heart	4,984
Total number of children not treated for defective heart.....	13,645
Percentage of cases with defective heart treated	26.8
Percentage of cases with defective heart not treated.....	73.2

Abnormal heart conditions, both organic and functional, are increasing rapidly. We are told by heart experts that 1.6 per cent of our school children are suffering with organic or functional heart trouble. This condition is said to be increasing more rapidly today than is tuberculosis. It is highly important that our school health service should be so organized and administered as to stimulate closer and better diagnostic attention and care to incipient heart conditions.

Pulmonary Conditions

Total number of children reported with defective lungs.....	6,756
Total number of children with defective lungs treated.....	2,903
Total number of children with defective lungs not treated.....	3,853
Percentage of children with defective lungs treated.....	43.0
Percentage of children with defective lungs not treated.....	57.0

This feature of our school health service is receiving very inadequate attention. Of the thousands of school children who are today suffering with tubercular infection, comparatively few cases are recognized. Of these, less than one-half are receiving any attention. Experts on tuberculosis tell us that 75 per cent of children become infected with the disease before the age of 15. Fortunately in most of these cases the infection is dormant though viable. Activity is often aroused by the acute exanthemata to which all children are so liable, by any illness lowering their power of resistance to infection, by malnutrition, by insanitary conditions at school and at home and by various other causes. I believe we shall never be able to control tuberculosis or satisfactorily reduce its prevalence until we are able to recognize the disease in its incipency or preincipency, and to so invigorate the resistance of the child as to prevent germ activity or to destroy infection. Sixteen of our cities and one village are now conducting

either open-air schools or open-air schoolrooms in which are housed and cared for approximately 1,000 school children. Under improved health supervision at school extended to the home when possible or when needed, these children improve rapidly and in six months are generally able to be returned to their normal grade. They ought to be kept under close observation for one or two years.

Defective Nutrition

Total number of pupils reported with defective nutrition	52,996
Total number of pupils with defective nutrition treated	17,788
Total number of pupils with defective nutrition not treated.....	35,208
Percentage of cases with defective nutrition treated	33.6
Percentage of cases with defective nutrition not treated.....	66.4

These figures do not begin to indicate the extent of malnutrition among school children. Several careful surveys made during the past year indicate, as stated elsewhere, that practically 20 per cent of all school children are 10 per cent or more underweight. Should this percentage obtain throughout the state, and it probably does, there are approximately 400,000 school children who are 10 per cent or more underweight. To remedy this condition is one of our biggest health problems. I believe it can and will be solved in due time. The basic necessity of normal health and physical growth of children is proper nutrition. It is absolutely impossible to deal successfully with the various phases of our health service unless proper attention is given to the nutrition of the growing child.

Nervous System

Total number of pupils reported with defects of nervous system.....	13,468
Total number of pupils with defects of nervous system treated.....	5,035
Total number of pupils with defects of nervous system not treated.....	8,433
Percentage of pupils with defects of nervous system treated.....	37.4

Percentage of pupils with defects of nervous system not treated.....	62.6
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These figures do not indicate the real extent of the prevalence of disturbance of the nervous system among school children. When our Division of Mental Hygiene and Diagnosis becomes more efficient we shall be able to determine more accurately the mental fitness of our children, the various causes contributing to mental retardation and the best means of preventing and otherwise dealing with the same.

Orthopedic Conditions

Total number of pupils reported with postural conditions	14,646
Total number of pupils with postural conditions treated	6,637
Total number of pupils with postural conditions not treated.....	8,009
Percentage of cases with postural conditions treated	45.3
Percentage of cases with postural conditions not treated.....	54.7

Reports under this section include children who were victims of the last two epidemics of infantile paralysis, others with spinal curvatures, congenital and acquired orthopedic conditions. We hope in time to give far better attention to the aftercare of these cases by correlating more closely the services of our school medical inspectors with our directors of physical education. Much I believe can and should be done along these lines in the future.

Defects of Skin and Scalp

Total number of defects of skin and scalp reported.....	39,290
Total number of defects of skin and scalp treated	44,849

Our statistics report more treatments than the total number of defects. Many children are treated several times during the year for such troubles as pediculosis and other skin diseases. The printed returns, therefore, give a very inadequate idea of the service rendered by our school nurses and doctors in combating parasitic affections of the skin.

Other Physical Defects

Total number of pupils reported with other physical defects.....	90,267
Total number of pupils with other physical defects treated.....	26,264
Total number of pupils with other physical defects not treated.....	64,003
Percentage of pupils with other physical defects treated.....	29.1
Percentage of pupils with other physical defects not treated.....	70.9

In this group are included a wide range of physical defects not classified in the above tabulations. Speech defect is found in many of these cases. Experts tell us that over 4.5 per cent of our school children suffer with one form or another of speech defect. This feature of our work offers much encouragement along both corrective and preventive lines.

These results in corrective work have been made possible by the generous coöperation of hundreds of the best men and women in the medical and dental professions in the state, by special opportunities extended to deserving cases by hospitals and dispensaries in many localities, by a splendid spirit of coöperation by other state departments, and by many agencies interested in the betterment of the health and physical fitness of school children.

8. HEALTH EDUCATION AND HEALTH TRAINING.

This phase of our school health service is placed last as it is the most basic part of our whole program, is the most inclusive in its scope and exerts the greatest determining influence on results to be accomplished. Many of us have appreciated for years that the solution of most of our problems of health and of sanitation is an educational problem. We have all felt the need of better trained teachers to do this work. We have realized fully that the teacher must be qualified to do the major part of the health work in the room in which she teaches. It has been equally as evident to us that pupils must be taught practical

hygiene and sanitation, and that such instruction must be of such a character as can be easily understood by children and easily utilized by them in the formation and development of good health habits. It is far better to teach less and to have what is taught clearly understood and properly applied to health achievements than to teach more that is poorly understood and poorly applied to the formation of health habits.

In New York state our normal schools will increase their courses from two to three years in the fall of 1922. In the rearrangement of the instruction and training to be given to pupil teachers, 60 hours will be devoted each year, or 180 hours in three years, to practical hygiene and sanitation. The state will be insistent that matriculants to normal schools and to the State College for Teachers shall be physically as well as mentally qualified to take up the work. Every student will be given practical demonstrations in school health service. Special efforts will be made to maintain a high standard of health among our pupil teachers. They will be trained to preserve their own health and to safeguard that of the pupils coming under their care after graduation. Eight of our ten normal schools are now doing more or less of this special work in hygiene and in sanitation. The New York State College for Teachers and the Oswego Normal School are now conducting an excellent course in this work. We hope and expect in a short time to have a department of health education and sanitation established and conducted in an efficient manner in all of our state institutions in which prospective teachers are trained.

A definite program has been adopted in our state for instruction to pupils in the public schools in health and in sanitation. In its administration it will be reduced to the simplest terms in subject matter taught and training required. It will be made as interesting as possible to children and of such a character as

can be utilized by them in the formation of good health habits. It will begin when the child first enters school and will continue through the high school. It will apply to every child in school. It will include daily health inspection of each pupil and will be under the direction of the teacher. It will establish a physical rating for every child on admission to school and will give school credit for health improvement as well as for mental progress. Systematic attention will be given to the correction of defects found and special emphasis will be placed on the need of keeping well. Its purpose will be to keep every child well, physically and mentally. Every community will be expected to do its best to contribute to the success of the program for better health of teachers and pupils and better sanitary conditions in schools. The teacher in charge will be held responsible for the success of the work in her room.

A practical syllabus in the simple essentials of hygiene and sanitation as outlined above has been prepared for the first six grades in our public schools. This we hope to have in operation in the early part of the next school year. It is our expectation to complete the syllabus for the upper six grades during the next ten or twelve months.

To supplement this health education work in our normal schools and in our public schools much can and should be done along certain other lines:

I. Many of our teachers now in service need to be stimulated to give better attention to their own health and to take more interest in the general program of school health service. This applies equally as well to many city, village and district superintendents. We have done as much in this line during the past six years as our small, limited staff would permit.

II. Our medical and dental colleges should be urged to give more attention to such preventive medicine and preventive dentistry as might apply to health work in schools. We endeavor to give one lecture each year to the seniors in all of our medical and dental colleges.

III. Physicians and dentists should be impressed with the importance of their part in the work and urged to contribute to its success by rendering efficient services. Special efforts are made to present our health program in schools to our various medical and dental societies in the state.

IV. Hospitals should be urged to give more and better attention to the training of their nurses in practical school hygiene and sanitation. We hope to induce our hospitals to provide special field experience to senior students in health work in schools.

V. Young women contemplating health work in schools in any capacity should be urged to take in preparation a liberal preliminary educational course. Nothing short of high school graduation should be accepted.

VI. Trustees and boards of education should be better informed as to the purposes and accomplishments of school health service. This is a big undertaking, but it ought to be done.

VII. We should inform our executives and legislators as to the services we are rendering and the results that are being accomplished that they may be better prepared to provide the necessary appropriations with which to carry on the work in an efficient manner. We have failed to do this in many instances.

VIII. A systematic, ethical program of publicity should be carried on to the end that people may know the urgent need of better attention to the mental and physical development of their boys and girls.

REPORT OF THE COMMITTEE ON MEDICAL SERVICE of the STATE AND PROVINCIAL HEALTH AUTHORITIES OF NORTH AMERICA

MATTHIAS NICOLL, JR., M.D., CHAIRMAN

Deputy Commissioner of the New York State Department of Health

Read before the Annual Conference at Boston, June 1, 1921

YOUR committee presents for consideration certain outstanding facts bearing upon medical practice and medical service at the present time:

1. The steadily increasing tendency of physicians to locate in the larger centers of population to the detriment of the rural districts.

2. The growth of specialization.

3. The increased patronage by the public of quackery under various high-sounding names, and the legalization by a number of states of the practice of pure quackery.

The inadequacy or absence of medical care in the rural districts is producing results which constitute a public health problem in which state health officers must be vitally interested. In so far as your committee can determine, this problem is one which to a greater or less extent is common to all the states. Notwithstanding the radical reduction in the number of medical men annually graduated from our schools, statistics would seem to show that there are a sufficient number of qualified physicians to attend to the need of the population as a whole if they were distributed on the basis of population. That this is not the case has been shown by numerous surveys. As a general rule, the cities are oversupplied, except during times of widespread epidemic, and the rural districts undersupplied, or, in many instances, totally without medical care, save for such as may be brought with difficulty from a long distance and at comparatively great expense. The causes for this condition of affairs have been thoroughly discussed during the past few years. Some

of them have been operative for a comparatively long period; others are of recent origin. They may be briefly summarized as follows:

- (a) The greatly increased requirements in academic and medical training, entailing a corresponding increase in the expenditure of time and money in order to qualify for a medical degree, so that large centers of population appeal to the recent graduate as offering an opportunity to realize a more adequate return on his invested capital than is presented by the rural districts.

- (b) The physical hardships of rural practice, irregular and long hours of work, and the comparatively small fees for medical service cause the country-bred boy, who, while acquiring a medical education, has become more or less familiar with the contrasting conditions of practice in the cities, to be unwilling in many instances to return to former surroundings of which he has very definite knowledge, while the city-bred boy only exceptionally dares to embark upon a career involving conditions to which he is totally unaccustomed.

- (c) The graduate of today is so thoroughly impressed with the complexity and difficulties of modern medical diagnosis and practice and the technical facilities essential to the proper performance of each that he is unwilling to engage in practice in communities where such facilities are lacking or inadequate. There is a broad field for discussion as to whether our medical schools are tending to exaggerate the dependence of all medical diagnosis and practice upon various branches of laboratory work and to

encourage the idea that a practising physician can only hope to master the pathologic conditions of and administer proper treatment to but a small part of the human body. Certainly it is a fact that the younger physicians are too frequently lacking in the power of personal observation in contrast to the physicians of a former generation, relying too much on technical aid in order to arrive at a conclusion. They put forth too little effort of their own, and are too ready to cast the responsibility for diagnosis and treatment on one or more specialists. Whatever the cause or causes, it must be admitted that specialists multiply the world over, many without the training to qualify them to be properly so-called, while the general practitioner is rapidly disappearing from the scene or becoming simply a medium for the transmission of clinical information regarding his patients to the experts in the various specialties.

(d) The desertion by the medical profession of towns and villages and the migration of this profession to cities is unquestionably a part of a psychologic phenomenon affecting all professions and business, which has been apparent for some time and which received an immense impetus during the war. Physicians who went into military service were not less affected than other professional and business men with a spirit of restlessness and vague yearning for conditions of life differing from those in which they had previously found satisfaction and profit, and in many instances have abandoned good and even lucrative practises in small places for public service or business and professional life in the large cities. Up to the present time their places have not been filled to any encouraging extent.

Other causes than those enumerated may readily be thought of, but your committee believes that those cited constitute the most important. State health department and other agencies engaged in matters affecting the public health who ven-

ture to call attention to such conditions are frequently accused of exaggeration, and attention is called to the fact that with good roads and almost universal use of automobiles not so many physicians are needed in rural districts as formerly in order to adequately care for the inhabitants. This is unquestionably true where good roads exist, but in places without number such is not the case, and in any event the argument neither contradicts nor furnishes a remedy for the fact that there are thousands of communities throughout the country even in our most populous states, in which there is not only inadequate medical service, but actually none at all. Thus, in the state of New York eighty-three such places containing a population of from four or five hundred to several thousand have sought aid from the State Department of Health in securing the services of a physician. By great effort, by advertising and personal solicitation extending over more than two years, it has been possible to furnish physicians to approximately one-half of these places—how permanently cannot yet be determined.

What may be done to meet these conditions which affect the happiness and health of a large part of the people of the country? To some extent the readjustment of economic and social forces may be counted upon to furnish a remedy in the not distant future. The slowing down of industrial activity, already in evidence, will serve to check the concentration of population within the cities, where the opportunities for gainful employment, business and professional, are even now markedly diminishing. Physicians as well as others will in increasing numbers seek the smaller communities from actual necessity when competition has become so keen as to render it impossible for them to make a living in the cities.

The building of good roads and provision for keeping them in repair and opened at all seasons of the year will not

only render practise less onerous but enable the physicians to cover a much broader territory than is now possible in many places. The mere act of placing a physician in a rural community will not, however, of necessity assure to the people of the community adequate medical care in the same sense that it is available in the larger centers of population, nor will the up-to-date and conscientious physician usually be content to remain in a place totally without the facilities for the practice of scientific medicine of which he has been taught the necessity. Your committee believes that there can be no difference of opinion among thoughtful members of the medical profession, whether engaged in medical practice, public health work, or both, as to the absolute need of providing for the rural districts adequate laboratory service, nursing service and hospital facilities. That the present impetus toward providing such facilities has largely emanated from state health officials and those organizations affiliated or coöperating with them is due to the fact that they alone possess the knowledge of the conditions in respect to medical service which exist throughout the state as a whole, and also because the medical profession, however wholeheartedly it may coöperate with and support innovations affecting medical practice and service, cannot be counted upon to initiate them.

Whether the facilities mentioned should be furnished in part or wholly by local, county or state funds, or augmented at times from private sources, is a matter upon which opinions will radically differ, and must be governed by local conditions as well as public sentiment. That the general practitioner—he who alone is qualified to undertake the manifold phases of routine medical practise—is fast disappearing and not being replaced by graduates of most of our medical schools is all too apparent. How far methods of teaching and increased qualifying requirements are responsible for this fact may well be given thoughtful

consideration by our medical directors and boards of licensure. It is a matter of frequent comment that the medical schools are not turning out today, as in former years, men who have a just appreciation of the dignity and value of general practice and of the medical art as contrasted with that of diagnostic ability. In his passion for arriving at an exact diagnosis the modern physician too often seems to overlook, or has not been taught to value, the little niceties of medical practise, the simple remedies, attention to details however trivial, the personal touch which made the physician of a bygone day such a welcome visitor to the sick room; for, after all, a sick person not only desires to get well but even more to be relieved of pain and discomfort in body and mind. Furthermore, our medical schools fail to impress on the mind of the student the fact that the functions of the human body are so correlated that the exclusive knowledge of any small part of the body cannot make for sound medical judgment. Notwithstanding the complexities and requirements of modern medicine, they are not beyond the comprehension and attainment of the earnest student, who, while he cannot hope to become a specialist in all phases of disease, may, nevertheless, with some training in the various specialties and a thorough training in general medicine, be eminently fitted to render a diagnosis and administer treatment in the great majority of cases which may come under his care. When thrown on his own resources, the general practitioner may be surprised to find in what a large proportion of instances he will be able to do justice to his patient without calling for the services of a specialist.

The question of making the study of medicine more attractive and more generally available to a greater number of a better type of students is one which is now receiving close attention at the hands of medical educators throughout the country. It is to be hoped that modifications and readjustments in the pres-

ent requirements of preliminary and professional training, and, if possible, a reduction of expenses entailed upon the student, may bring about the desired results.

Finally, those who direct the policy of medical education would do well to study the functions and usefulness of the smaller and well-conducted medical schools. There is every reason to believe that those especially which are situated outside of large cities are a most important factor in supplying the medical needs of the rural districts. Thus, a survey of the 1,700 graduates of the Albany Medical School in New York state shows that only 174 have settled in and about the metropolitan district, and that more than one-third have taken up practise in communities of 10,000 population or less. Exact data on other smaller medical schools in New York state situated outside of New York City are not yet available, but from information thus far obtained they too are largely supplying a territory which includes small cities, towns and villages comprised within a comparatively small area. Conversely, New York City schools have not of recent years been a large factor in furnishing physicians to the districts of which the small schools are the medical center. Without dwelling upon the causes for this tendency of graduates of the smaller schools to establish themselves in localities immediately surrounding such schools, and in many instances in or near their homes and friends, the fact is of such vital importance to the solution of the rural district medical problem that such schools throughout the country if for no other reason should be fostered and encouraged and their financial difficulties met in every possible way, provided they are or may be equipped to turn out physicians who are qualified in the fundamentals of medical practise, even though they may not have had an opportunity to make such a thorough study of the

various specialties as is afforded at many of the large medical institutions.

By the natural course of events, then, and by the adoption of the suggested measures in whole or part it is to be hoped that the needs of rural districts for medical service may in time be adequately met through the restoration to them of the well-equipped general practitioner, trained in the fundamentals of public health, and furnished with adequate facilities for diagnosis and treatment. There can be no doubt that this is the ideal solution of the problem, but if it should be impossible of realization, or realization be so long delayed that the existing and ever-increasing needs of the rural districts become insistent, other measures will have to be adopted.

Your committee believes that the practise of medicine is not a state function and should not be entered into by the state save as a last resort, but there can be no dispute that when absence of medical care has reached a certain point and affects a sufficient number of people, a public health problem is created, of which the state is morally bound to take cognizance. Throughout this country people in thousands of isolated communities are calling for help or are suffering and dying in silence because there is no one to listen. To meet these needs various measures have been proposed. Some have been adopted and are now functioning. Perhaps the most far-reaching and ambitious of these is that emanating from the state of New York and embodied in the so-called health center bills, which have failed of passage by two legislatures largely by reason of the opposition of the medical profession, which assumed to regard their provisions as constituting a form of or entering wedge for state medicine, and as a substitute for, and only less objectionable than so-called health insurance; and, second, by reason of the necessity for economy in financial expenditures by the state. These bills sought by means of state subsidy to place in all districts of the state where they

were needed, but only with the consent of the county and city governments, facilities for caring for the sick; hospitals with adequate medical attendance, laboratories, nursing service, school inspection, occasional clinics and consultation service provided by the State Department of Health. The facilities, except the last two mentioned, were to be furnished by localities which chose to take advantage of the provisions of the bill and avail themselves of the state subsidy. The administration of the health center, when established, was to be absolutely local, the state through the Department of Health providing part of the funds and exercising supervision only so far as to insure efficiency and good faith in putting into effect the purposes of the bill.

What the future has in store for this form of legislation cannot be predicted. The objects sought to be accomplished have received widespread approval, not only in New York state but throughout this country and even by foreign governments. There exists only a difference of opinion as to the best methods of accomplishing them.

The plan devised by Dr. Allan Freeman of Ohio sought to accomplish much the same object by a somewhat different method. It was brilliantly conceived, deserving of support, and should certainly bear fruit at some future time.

Among other means that have been adopted by various states to meet the rural needs for medical service are county health organizations, usually with a full-time health officer and necessary assistants; local health centers, so-called, consisting of a grouping of local health activities in so far as possible within the same building; subsidizing resident physicians by villages and towns; occasional consultation clinics to which local physicians may bring cases in which the diagnosis is obscure; child welfare stations and occasional children's consultation clinics; and clinics for mental hygiene and tuberculosis. Thus the problem is being worked out,

it must be confessed, in a somewhat piecemeal and haphazard fashion, in different parts of the country, and it is doubtful if any general plan for efficient relief will be adopted by state governments until by a process of public health education more people, especially city dwellers, are brought to a realization of the gravity of the situation and are willing to bring pressure to bear upon state legislatures for action. The duty and responsibility for bringing this about must of necessity rest upon state health officials with such aid from private organizations as may be available.

SPECIALIZATION

This is the age of specialization—in manufacture as well as in the professions—but the term "specialist" as applied to medicine means little or nothing without a knowledge of the training, experience and personality of him who bears the title. Thus he may be and all too frequently is a recent graduate who has spent a few weeks or months in special study, or one who has given many years and acquired broad experience in the study of pathologic conditions of a single organ or group of organs. He may have an enlightened knowledge of general medicine, or know little of abnormal conditions outside of his chosen field. He may be an actual menace to the public, or one whose advice and counsel is of the utmost value. Has not the time arrived when, for the protection of the public and good name of the medical profession, medical educators and boards of licensure should require graduates in medicine to engage for a period of years in general practice before being permitted to take up a specialty, including that of general surgery, and then only after a minimum period of special study under stipulated conditions? This plan would accomplish three things. First: It would increase the number of general practitioners; second, it would enforce upon intending specialists a knowledge of general med-

icine; and, third, it would eliminate the pseudo-specialists.

As recently pointed out by Dr. Frederick R. Green in an excellent paper on the social responsibilities of modern medicine, there is urgent need for inculcating in the minds of the practising physician that medical practise may no longer be regarded as individual but as a matter which very frequently involves responsibility for the welfare of the local community. Training in the fundamentals of public health, hygiene and sanitation and social welfare is lamentably deficient in our present medical curricula. This constitutes perhaps the one specialty which should receive much more consideration than is at present accorded to it.

QUACKERY

It is a truism that people love to be fooled, but that is not the chief reason for the growth and patronage of charlatanism which may be attributed largely to the severance of the ties which formerly bound the majority of the people to their family physicians and established a relationship which exerted an influence upon the habits of life and thought of the people second only to that of religious belief, the value of which as a factor for the preservation of national stability can hardly be overestimated. There are no magnificent Cagliostros in our day and generation. The modern quack is the offspring of a pseudo-medical trust whose agents and alleged graduates penetrate to all parts of the country, and, with or without legal sanction, carry on their trade without let or hindrance. Plentifully supplied with funds and personal influence they yearly besiege the legislatures of the various states seeking recognition. A number of states have already yielded to

the pressure, some to their subsequent regret.

The legal recognition of one cult leads but to the recognition of another. As one ceases to be fashionable another rises to take its place. As has been wittily said, "Already the chiropractic has taken the spine out of the poor osteopath," until it is only a question of time when various cults, each with a more or less independent board of licensure, will be sanctioned by one state after another and flood the country with a motley crew of ignorant and unscrupulous practitioners of weird, valueless and frequently harmful methods—a sad commentary on human intelligence and a grave menace to the public health.

Unless some means shall be found to stop the growth of pseudo-medical cults in the country their number will be limited only by the failure of Greek and Latin dictionaries to provide more or less descriptive terms for new methods of quackery.

There is urgently needed an authoritative definition by the highest court of jurisdiction as to what constitutes the practice of medicine. State and local health officers in cooperation with medical associations must continue to fight, even though often defeated, for the principle that no one shall undertake to diagnose or treat any human ailment who is not qualified so to do by standards of training and experience set by the educational authorities of the state. Whether a campaign of public health education on the menace of the medical cults should be inaugurated by this conference is a question which your committee recommends for earnest consideration.

(Signed)

MATTHIAS NICOLL, JR., *Chairman*.

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THE UNSOLVED PROBLEMS OF PREVENTIVE MEDICINE

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An inventory of the present status of the disease entities with which the modern sanitarian and clinician have to deal tempers the facile optimism of the unthinking. Whereas the infections transmitted by insects, the waterborn diseases, and certain diseases for which we possess methods of specific immunization have been well conquered, we are still unable to control the high mortality from degenerative diseases of the heart, blood-vessels and kidneys, from pneumonia and other acute respiratory infections, cancer and, to a less extent, tuberculosis. To map out the varied lines of attack upon these unsolved problems is the object of this paper.

IN ancient times civilizations were born, grew for a few generations and fell into decay. Conquests brought disease, and civilizations were obliterated by contagion. History reveals to us numerous instances in which heroes brought to their rejoicing countries, with their prisoners of war, pestilences which vanquished the victors. The Greeks were unable to cope with malaria, yellow fever and bubonic plague. The medicine of Hippocrates, the philosophy of Plato, and the science of Aristotle could not save Greece from the ravages of disease. The great Roman Empire, which promised to encircle the earth, met with a similar fate. Malaria, yellow fever, smallpox, typhus, cholera, and dysentery have been the destroyers of civilizations and determiners of history. They darkened the world in the Middle Ages, when whole nations went into coma and died.

No scientific knowledge of the causation of disease, and hence of disease prevention and treatment, was possessed by mankind until the last half century. Diseases were thought to be due to the entrance into the body of evil spirits beyond the control of man.

We are just emerging from a past in which superstition and mysterious influences were invoked to explain the spread of disease. Man's progress from the marshes of ignorance to the uplands of intelligence has been slow and halting. Even at the present time only a small part of the earth is illuminated by the light of knowledge. Much of it is still covered by clouds of ignorance. Today only one per cent of the population of the world has medical care and sanitary regulations. Is it any wonder that epidemic diseases exist, and spread in times of war?

All of this is a matter of great importance, for the successful conquest of disease involves wide co-operation of all the people, and this is impossible without a fair understanding of, and confidence in, the hygienic and sanitary measures necessary for the control and prevention of communicable diseases. Even more important is the education of the public in the conquest of those diseases which our present knowledge and practice of preventive medicine have been unable to control. I mean the unsolved problems of preventive medicine: degenerative dis-

eases of heart, kidney and blood vessels; tuberculosis; cancer; acute respiratory diseases (pneumonia, influenza, scarlet fever, measles, etc.); venereal diseases, and metabolic diseases (diabetes, dietary diseases).

Typhoid fever, cholera, malaria, typhus fever, yellow fever, and hookworm can be controlled by sanitary measures. We need only to control the environment—purify water supplies, destroy insects, administer quinine, prevent food contamination—and these diseases will disappear from any country. But not so with cancer, acute respiratory diseases, tuberculosis, and degenerative diseases of heart, blood vessels and kidney. The latter diseases have been increasing rather than decreasing.

We have conquered many of the infectious diseases (typhoid, cholera, typhus, malaria, yellow fever, rabies, tetanus, diphtheria, smallpox, etc.) by organized administrative efforts at betterment of living conditions—sanitation, immunization, isolation and quarantine, and disinfection. We can conquer others by the application of these same principles. But against many of the respiratory tract infections (tuberculosis, influenza, pneumonia, measles, poliomyelitis, epidemic encephalitis, scarlet fever, meningitis, etc.), we are less successful at the present time. These latter can at present be eradicated only by personal hygiene applied to the individual, the safeguarding of one person against another.

The control of the contagious diseases transmitted by infectious droplets from the respiratory tract is made even more difficult by the existence in practically all of these diseases of so-called "germ-carriers," people who are apparently well but harbor and spread disease germs. This control of the diseased individual and the germ carrier is the most difficult problem in the prevention of communicable disease.

It necessitates early recognition of

all cases of contagious disease, discovery of germ-carriers and their proper treatment and isolation, isolation and quarantine of all cases, an efficient health organization, and education of the public in the fundamental principles of personal hygiene. In diseases like influenza, scarlet fever, measles, and epidemic encephalitis, where the germ is probably a filterable virus, the difficulties are even greater, since we have no laboratory methods at present for the diagnosis of the individual case.

Unless we can discover the germ and develop an effective preventive vaccination, we have only one line of attack in some of the recurring epidemic diseases like influenza, poliomyelitis, and epidemic encephalitis. This is the eradication of their endemic foci in various parts of the world. Such work could be accomplished only by some international organization such as the League of Red Cross Societies. The task will be a very difficult one, much more so than the eradication of malaria and yellow fever by mosquito destruction, or of typhoid, cholera and dysentery by water purification and vaccination.

With the conquest of communicable diseases by the application of our knowledge of bacteriology, immunology, and sanitary engineering, the average duration of life has been greatly lengthened in the last half century. The result has been that more people reach middle life, and consequently more cases of cancer, and cardiac, vascular and renal disease occur. Formerly only the highly resistant or physically fit were the survivors. Now, with our developments in preventive and curative medicine, many weaker individuals also survive. Perhaps this is why the average expectation of life at ages beyond sixty is not so high as it was hundreds of years ago; for inherited constitution fundamentally and primarily determines how long an individual will live. (Pearl).

At any rate the chronic diseases of the latter half of life, cancer, nephritis, organic heart disease, are increasing in most civilized countries and becoming the most important problems in preventive medicine. As we have at present little definite knowledge of their causes, it may be of value to briefly review the status of our views regarding these diseases, and to suggest ways of reducing the great mortality caused by them. Not only do we lack knowledge regarding their cause, but we do not even know what part heredity plays in their production. Is it not possible that inherited diathesis is an important factor in predisposing to these degenerative and neoplastic diseases? A knowledge of the hereditary and constitutional factors determining death from various diseases might be of great value. The problem is one in biology. In this connection it is interesting to note that Dr. Pearl has found from his statistical studies on influenza that the influenza epidemic mortality was closely correlated with the three great causes of death, tuberculosis, diseases of the heart and diseases of the kidney. The severe epidemic killed chiefly those subject to these constitutional diseases which are concerned with functional breakdown of the three fundamental organ systems of the body. In what other acute diseases is there such a relationship? We cannot answer at the present time.

If the existence of constitutional disease predisposes to acute infections with a mortality higher than among the physically fit, must we not give more attention to the findings of the Provost Marshal General's office on the physical examination of several millions of men in the prime of life? Twenty-nine and fifty-nine hundredths per cent were found disqualified for military service by local boards, and an additional 8 per cent were rejected on re examination by camp surgeons. Thus, 37 per cent of our young men

were unfit for military duty by reason of physical and mental defects. What must be the percentage in the higher age groups? Of the defects which unfitted over one third of all the men examined, 88 per cent can be classified under six heads:

	Per cent
Diseases of bones and joints.....	26
Special senses	15
Cardio vascular	13
Nervous and mental.....	10
Tuberculosis	9½
Defective physical development.....	8

Much of this physical disability begins in early life when it is preventable. Over 80 per cent of the school children examined in New York City had major or minor illnesses or defects, many curable. They were decayed teeth, enlarged tonsils and adenoids, enlarged lymph glands, errors of refraction, middle ear disease, tuberculosis, etc. Are not many of these focal infections from which germs are carried to various organs and tissues causing most cases of organic heart disease, nephritis, arteriosclerosis, generalized tuberculosis? The recent surveys made at Framingham, Mass., indicate that 70 per cent or more of any typical group of people needs medical or dental advice or treatment for serious minor ailments. The cheapness of human life is evidenced by the fact that there are over 500,000 deaths annually from communicable diseases, over 80,000 deaths from accidents, and over 5,000,000 sick.

The principal causes of death in the Registration Area of the United States in 1916, before the influenza epidemic and the war, were:

Heart disease	114,000
Tuberculosis	101,000
Pneumonia	98,000
Bright's disease	75,000
Cancer	58,000

As this area included only 70 per cent of the total population of the United States, and only 44 per cent of the total land area of the country, the deaths from the above causes for the entire country were approximately:

Heart disease	145,000
Tuberculosis	130,000
Pneumonia	125,000
Bright's disease	100,000
Cancer	80,000

Let us consider each of these unsolved problems of preventive medicine, calling attention chiefly to what can be done at present to reduce their growing mortality.

CANCER

While 77,000 American soldiers gave their lives for their country during the two years of our participation in the Great War, about 180,000 people died of cancer in the United States. Few people realize the great toll of life taken by this disease. Cancer causes at present one out of every ten deaths in people past the age of 40. It is responsible for one in every eight deaths in women, and one in every thirteen in men above that age. More people over 40 are killed by cancer than by tuberculosis or pneumonia. About 95 per cent of deaths from cancer occur in people above 35. Between the ages of 35 and 45 three times as many women as men die of cancer. It is estimated that in 1920 the cancer mortality in the United States was close to 100,000.

What a small percentage of cases of surgically curable cancer is detected in the early stages! Cancer can be cured in a high percentage of cases when seen early, for it is then a local disease. The average patient waits about twelve months before consulting a physician or surgeon. Unfortunately cancer is often not accompanied by pain, hence neglected until it has become inoperable.

Of the 90,000 deaths from cancer occurring annually we find the organs affected as follows:

Stomach and liver.....	35,000
Female generative organs.....	13,000
Female breast	8,500
Mouth and tongue.....	3,500
Large intestine and peritoneum....	12,000
Skin	3,500
Other organs and parts.....	14,500

The exciting cause of cancer is at

present unknown. We may look upon it as an abnormality of growth, a condition in which certain cells of the body multiply unchecked and usually serve no useful function. Perhaps certain hereditary factors cause an increased sensitiveness to mechanical and chemical stimuli in certain organs and tissues of the body. There can be no doubt that mechanical and chemical irritations play an important role in the causation of cancer. Perhaps the chemical stimuli are products of cell necrosis which, under certain local conditions influenced by heredity, internal secretions and abnormalities in early embryonic development, cause the functional energies of the cell to be transformed into growth energy. Similar growth can also be produced by chemical agents such as aniline dyes, coal tar derivatives, also paraffin, x-ray, burns, chronic inflammations. These facts suggest that there are probably many exciting influences which stimulate the cell proliferation. In certain sarcomas of lower animals a filterable virus has been obtained. In plant cancer a bacillus has been found. But in human neoplasms no micro-organism has thus far been shown to cause the disease. Given then an increased sensitiveness to growth stimuli, these chemical and mechanical agents acting for a sufficient length of time will cause neoplastic growth.

It is obvious from this brief discussion of the etiology of cancer that our only hope today is early recognition of cancer and pre-cancerous conditions, with proper surgical and radium treatment. This can be done only by education of the public regarding the early signs of cancer and the necessity of prompt and efficient treatment. Here the physician, the health officer and the nurse have an obligation to the public. They can receive aid from the National and State Societies for the Control of Cancer. The surgeon must make use of the trained pathologist and

co-operate with him in the diagnosis of his cases. The physician must recognize the cases in the pre-cancerous stage, or early stage of malignancy, or benignancy. The public health nurse is best able to advise women regarding the early symptoms and proper treatment of hard lumps in the breast, disease of the nipple, menstrual disturbances, etc.

TUBERCULOSIS

There are over 1,000,000 cases of active tuberculosis in the United States, with perhaps another million of inactive or quiescent cases. In other words, about one per cent of the population of this country is suffering with the great white plague. About 130,000 die annually of this disease. This figure represents one-tenth of all deaths from all causes, and about 30 per cent of preventable deaths. The discovery of the fact that 95 per cent of adults are infected with the germs of tuberculosis, and that at least 60 per cent of children have been infected at the age of ten makes the situation more hopeful than it seems. In other words, about 93 per cent of the adult population become infected without developing active disease. They develop a degree of immunity which protects them against subsequent infection, unless that infection be massive or oft-repeated.

On the other hand, mild infection by way of the digestive tract, or, less often, the respiratory tract, in childhood, may lie dormant for years only to produce active tuberculosis through lowered resistance caused by dietary deficiencies and such diseases as diabetes, measles, influenza, typhoid, pneumonia, etc. Massive infection in infancy or childhood is usually followed by an acute form of the disease with a high death rate, especially during the first few years of life, when no immunity exists. The same is true of races of human beings which have

not previously suffered infection. In other words, massive infection, or frequent reinfection, in the non-infected causes an acute form of tuberculosis. In the previously infected (occult, or benign or quiescent infection) such infection may produce a chronic, resistant form of tuberculosis, the type most often seen in adults.

It is clear that to solve the tuberculosis problem we must discover (1) an effective vaccination in childhood which will protect against subsequent infection, or (2) a chemotherapeutic agent or specific drug that will cure the disease. With reference to vaccination the recent work of Shiga is very promising. He is using in children a vaccine of tubercle bacillus which is readily absorbed and gives only a slight reaction. It is an emulsion of a tryptoflavin-fast strain of human bacillus, avirulent for the guinea-pig in doses of 1 mgr. sensitized by immune serum, and with the addition of a filtrate of the broth of erythrosin-fast culture. Very good results have been reported with this method of vaccination. Data on its prophylactic value can be obtained only after long observation of large numbers of vaccinated children. The vaccine of Calmette may also prove to be of considerable value. The experiments on cattle have been very successful. Plans are now being made to carry on similar experiments on anthropoid apes.

No chemical substance has yet been found which can be said to be a specific cure for tuberculosis. Such an agent must not only be tuberculocidal, but it must be able to penetrate the avascular tubercle and the waxy capsule of the bacillus and retain its activity in the body. It must therefore possess a selective toxicity toward the tubercle bacillus. Arsenic compounds, various aniline dyes, iodine compounds, and heavy metals have been tried. Some promising results have been obtained

with a few chemical compounds, and the future may reveal some specific drug. The chemotherapy of tuberculosis is an unlimited field for research, with the thousands of chemical agents yet to be tried.

For the present we must be satisfied with the reduction of active tuberculosis by (1) increasing body resistance and (2) avoiding massive or oft-repeated infection.

Tuberculosis is largely a social and economic problem, one which concerns the entire community, and can be solved only by united efforts. Periodic physical examinations, strict supervision of children, proper diet, sanitary homes, pasteurization of milk and tuberculin-testing of cows, free dispensary and clinic treatment, and sanitarium treatment of advanced cases are some of the ways in which the disease must be reduced. The behavior of man is more important than that of the bacillus. The active case is a menace to the community and often infects all of his associates before his disease is recognized. He may expectorate as many as a billion germs in twenty-four hours. Unlike other infectious diseases there is often no definite incubation period, and the early symptoms are vague. Expert examination is necessary for such early diagnosis. The person with positive sputum is an advanced case, often incurable, and the chief source of spread of the disease.

ARTERIOSCLEROSIS AND CARDIOVASCULAR DISEASE

Arteriosclerosis and cardiovascular disease, although closely related, are by no means identical. We find severe chronic lesions in the arteries without the usual symptoms of cardiovascular disease, and there are cases of cardiovascular disease practically free from arterial lesions. In many instances both occur simultaneously in varying combination. (Ophüls).

The ultimate cause of both these con-

ditions has been sought in certain chronic intoxications and infectious diseases, especially rheumatic infections, typhoid, diphtheria, tuberculosis and syphilis. Dr. Ophüls has recently thrown much light on this subject by a thorough clinical and anatomic study of five hundred complete necropsies. He determined preceding infection by clinical history and careful examination for old inflammatory lesions in tonsils, heart valves, and other known foci of chronic infection.

In the cases in which all history or signs of previous infections were absent chronic arterial disease was almost entirely absent, but appeared early and frequently in the group with infections. Only certain infections seemed important, the chronic rheumatic (septic) conditions. Not only did the septic group include practically all cases of chronic arterial disease, but also all cases of hypertension and of nephritis in which there was sufficient history.

The arterial injuries usually begin in early life and progress slowly even after disappearance of the focal infection. Chronic pulmonary tuberculosis and syphilis were rarely related to arteriosclerosis and associated conditions, unless a chronic rheumatic condition was also present. This statement does not apply to aortic or cerebral arterial disease. Arteriosclerosis and hypertension were found to be loosely related, connected only by their common relation to certain infections. At times there may be severe functional derangement of the cardiovascular system, at other times marked anatomic lesions, or both may coexist.

Both are the result of the action of toxic bacterial substances which may at times attack the arteries, at other times the kidneys, or both. The arterial disease is not the cause of the nephritis nor the nephritis of the arterial disease. We find, then, a series of cases: first, those of serious arterial involvement and little renal disease; then intermediate cases with marked involvement of arteries and

kidneys; and those with severe nephritis and little arterial disease.

If these observations of Ophüls be correct, do we not have further evidence of the dangers from focal infections of teeth, tonsils, adenoids, middle ear, appendix, etc., so well emphasized by Billings and his colleagues several years ago? Are not most of our cardiovascular-renal diseases systemic manifestations of a pre-existing focus of streptococcus or other infection which develops in early life, and should be found and removed in childhood if possible? Perhaps a hereditary weakness of the cardiovascular-renal system makes some individuals more susceptible than others to the streptococcus, or some toxic substance, as yet undiscovered, which is the cause of nephritis and cardiovascular disease.

NEPHRITIS

Time will not permit me to discuss at length the various views regarding the etiology of the nephritides. I wish only to call attention to the rapidly developing view of the infectious nature of most of these types of degenerative, inflammatory and atherosclerotic renal disease. Careful studies of large groups of human cases indicate the importance of a focal infection, usually streptococcus, as the cause of the disease. In childhood nephritis usually follows scarlet fever, tonsillitis, erysipelas, endocarditis, rheumatic fever or chorea, in all of which the streptococcus undoubtedly plays the most important part. These are not the only causes, however. The nephritis may present itself months or years after a focal infection when the focus may no longer be present, and when if present its removal may be of slight value. We have already called attention to the probable independence of the cardiovascular lesions except for their common etiology.

The removal of recognized foci of infection as early as possible, prompt and efficient treatment of all acute infectious fevers (especially those accompanied by streptococcus infection), and dietary re-

strictions to decrease the amount of renal work and afford rest and opportunity for repair will do much to prevent renal disease. The preventive treatment of chronic nephritis is at present undeveloped because of our lack of knowledge of the etiology and factors influencing the progressive development of renal lesions. Here also removal of foci of infection during early life may prove to be the most effective preventive measure. After the foci have existed for some time even removal may fail to stay the progress of the disease.

PNEUMONIA

Pneumonia kills about 100,000 people annually in the United States. In the four months of the influenza epidemic (September to December, 1918) 500,000 people died in this country from pneumonia and influenza. The disease is usually caused by the pneumococcus, types 1, 2, 3, or 4. These can be differentiated by agglutination. This differentiation of types by obtaining the organism from the sputum is now of greater importance in the epidemiology as well as treatment, and possibly in prevention.

For type 1 pneumonia we have a specific immune serum which if administered in proper dosage early in the disease will cure most cases. Unfortunately we have no effective serum for the other types. With the exception of the use of type 1 serum the treatment is still largely symptomatic. Foreign protein therapy may be of value in certain cases, but must be used with caution.

In pneumonia prevention the mixed pneumococcus vaccine has already been shown to be of decided value. The work of Lister in South Africa and of several American physicians in this country has demonstrated its value in prevention in a certain percentage of those vaccinated. The value of influenza vaccines was no doubt due to their pneumococcus content.

The work of Blake and Cecil on experimental production of pneumonia in

monkeys by intra-tracheal injection of organisms has greatly increased our knowledge of the pathology and modes of infection in this disease. The necessity of isolation of all cases and identification of carriers in prevention is of course well recognized.

DIABETES

Let us discuss briefly what can be done to prevent this disease of metabolism. It is estimated that there are 500,000 diabetics in the United States. Joslin has recently called attention to the relation of obesity to diabetes and found from his study of 1,000 diabetics that diabetes is largely the penalty of obesity. The overweight person is at least twice, and at some ages forty times, as liable to the disease as the person of average weight. Maintenance of average weight will prevent more than half of all the cases of diabetes in this country. Education by the medical profession along this line should be carried on vigorously. Cases that exist should be diagnosed as early as possible. This can be done by routine urinalysis. Early dietetic treatment is necessary to reduce the mortality from this disease and its sequelæ.

We shall not be able to consider at this time the other metabolic diseases, or the dietary deficiency diseases, such as those due to deficiency of vitamins, etc.

SUMMARY AND CONCLUSIONS

We have seen that whereas the infectious diseases transmitted by insects, the water-borne diseases, and certain diseases for which we possess methods of specific immunization have been conquered, we are still unable to control the high mortality from degenerative diseases of the heart, blood vessels and kidney, cancer, pneumonia and other acute respiratory infections and tuberculosis.

In the cardiac, vascular, and renal diseases chronic septic (rheumatic) processes seem to play a most important part. They can no doubt be greatly reduced by early removal of focal infections.

In cancer, the cause of which is still unknown, we must depend upon education of the public, removal of precancerous conditions, upon surgical treatment, and the use of radium in selected cases.

In pneumonia and other acute respiratory infections, control of the individual patient and search for carriers with proper isolation and treatment offer us at best little hope in reducing the high mortality from these diseases. Perhaps vaccination will be the solution of the problem, as favorable results have already been obtained in pneumonia.

In tuberculosis, protection against massive or oft-repeated infection, especially during infancy and childhood, is most important. The environment of children must be made safe from tuberculosis infection. Mild infection in early life seems to confer a distinct immunity to subsequent disease. But inactive infection may become active disease unless a high body resistance is maintained at all times. The ubiquity of tuberculosis infection, with only one per cent of active cases in the population, indicates a high resistance to ordinary infection. Perhaps a vaccination will be discovered which will increase this immunity. The work of Shiga and Calmette is very promising along this line. A chemical substance which will cure the disease may some day be found.

Lastly, better medical service rendered to the public through the establishment of fully equipped health centers in every community and available to the family physician for the diagnosis and treatment of disease, and periodic physical examinations; the organization of group medical clinics in larger centers of population for more expert diagnosis and treatment; further development of federal and state forces in disease prevention; and the promotion of scientific research and investigation will do much toward solving these problems in the future.

Modern medicine is becoming more and more a social service concerned with

the prevention of disease, prolongation and betterment of life, improvement of physical health and efficiency through organized community efforts. The physician must uphold his reputation as the leader in this work. He can do this only by constantly acquiring knowledge. He must have the spirit of scientific investigation.

Let us adopt as our motto: "Every ill that can be relieved shall be removed."

The wisdom of Harvey, Leeuwenhoek, Jenner, Pasteur, Koch, Reed, Ross, Ehr-

lich, Behring, Wright, Röntgen, and many others has secured for us a greater measure of health and longer term of life. Let us do as well for the next generation.

Let us live for the present and the future.

Not myself, but the truth that in life I have
spoken,
Not myself, but the seed that in life I have
sown,
Shall pass into ages—all about me forgotten
Save the truth I have spoken, the things I have
done.



REPORT OF COMMITTEE ON FULL-TIME HEALTH OFFICER LEGISLATION

EUGENE R. KELLEY, M. D.,

Commissioner of Public Health for Massachusetts, Boston, Mass.

Read before the Conference of State and Provincial Health Authorities at Boston, Mass., June 1 and 2, 1921.

AS chairman of the Committee on Full-Time Health Officer Legislation of the Conference of State and Provincial Health Authorities I have the honor to submit the following report:

Attached is the form of questionnaire sent out to the provinces and states and territories. Replies have been received from all states except Maine and South Carolina, and from all provinces except Manitoba and New Brunswick. Of the territories, replies were received from Porto Rico and Alaska, but none from the Philippine Islands, Hawaii and the Canal Zone.

Thirty-three of the forty-six states replying stated that no legislation of this nature had been introduced during the past year. Four of this number reported that they had had no session of the Legislature during the past year.

Five states reported that legislation had been introduced but failed of passage for various reasons. These states are Arizona, California, Indiana, Minnesota and West Virginia.

In two states legislation was intro-

duced and was still pending at the date of the last reply to the questionnaire. These states are Illinois and Michigan.

Legislation was enacted in six states as follows:

Mississippi reports that legislation has been passed permitting counties to create health departments and appoint health officers.

New Mexico reports that an amendment has been added to the health law which permits counties and incorporated towns to levy a tax of one-half mill on the dollar for health purposes. This legislation was further amended in 1921. Five counties out of thirty-one have already created full-time health departments which include the incorporated towns in each case. A further amendment of this year provides that a full-time health officer shall meet certain requirements as to training and experience in public health work.

New York reports that no purely full-time health officer legislation was introduced during the last session of the Legislature, but that two bills bearing indirectly on this subject were introduced

and have become law: (1) "An Act to Amend the Public Health Law in Relation to General Health Districts," and (2) "An Act to Provide for a Department of Public Health in and for Second and Third Class Cities."

Tennessee reports that legislation has been enacted enabling counties to establish county departments of health in charge of full-time health officers, with sanitary inspectors, visiting nurses and clerical assistance.

Wisconsin reports that legislation has been enacted providing that all cities in the state of 25,000 population or more shall provide for a full-time health officer.

Wyoming reports that a bill providing for a whole-time health officer was passed at the last session of the Wyoming legislature, to take effect May 20, 1921.

Of the provinces, replies were received from Alberta, British Columbia, Nova Scotia, Ontario, Quebec and Saskatchewan.

No replies were received from Manitoba and New Brunswick.

British Columbia, Nova Scotia, Ontario, Quebec and Saskatchewan reported that no legislation had been introduced this year.

Alberta reports that legislation had been introduced guaranteeing the permanency of tenure for a full-time health officer, but was defeated.

Of the territories, Porto Rico reports that no new legislation for full-time health officers was submitted to the Legislature.

Special note is made of the replies from Pennsylvania, Delaware, Alberta and Nova Scotia, from which the following quotations are taken:

Pennsylvania: "No legislation bearing on full-time health officers was introduced during the present year. This matter is left entirely to the discretion of the commissioner."

Delaware: "A bill was introduced by the state board of health uniting the work of cannery inspector and food inspector. This bill was defeated as it provided for an increased appropriation."

Alberta: "Legislation was introduced guaranteeing the permanency of tenure for a full-time health officer, but was defeated on the ground that since the salary is paid by an elected body, such body should decide terms of employment."

Nova Scotia: "No new legislation with regard to full-time health officers has been submitted to our Legislature during the present year. Through a peculiar inadvertence the legislation we had—permitting groups of neighboring towns to unite in the appointment of a full-time medical officer—was struck out, but will be restored during the present session."

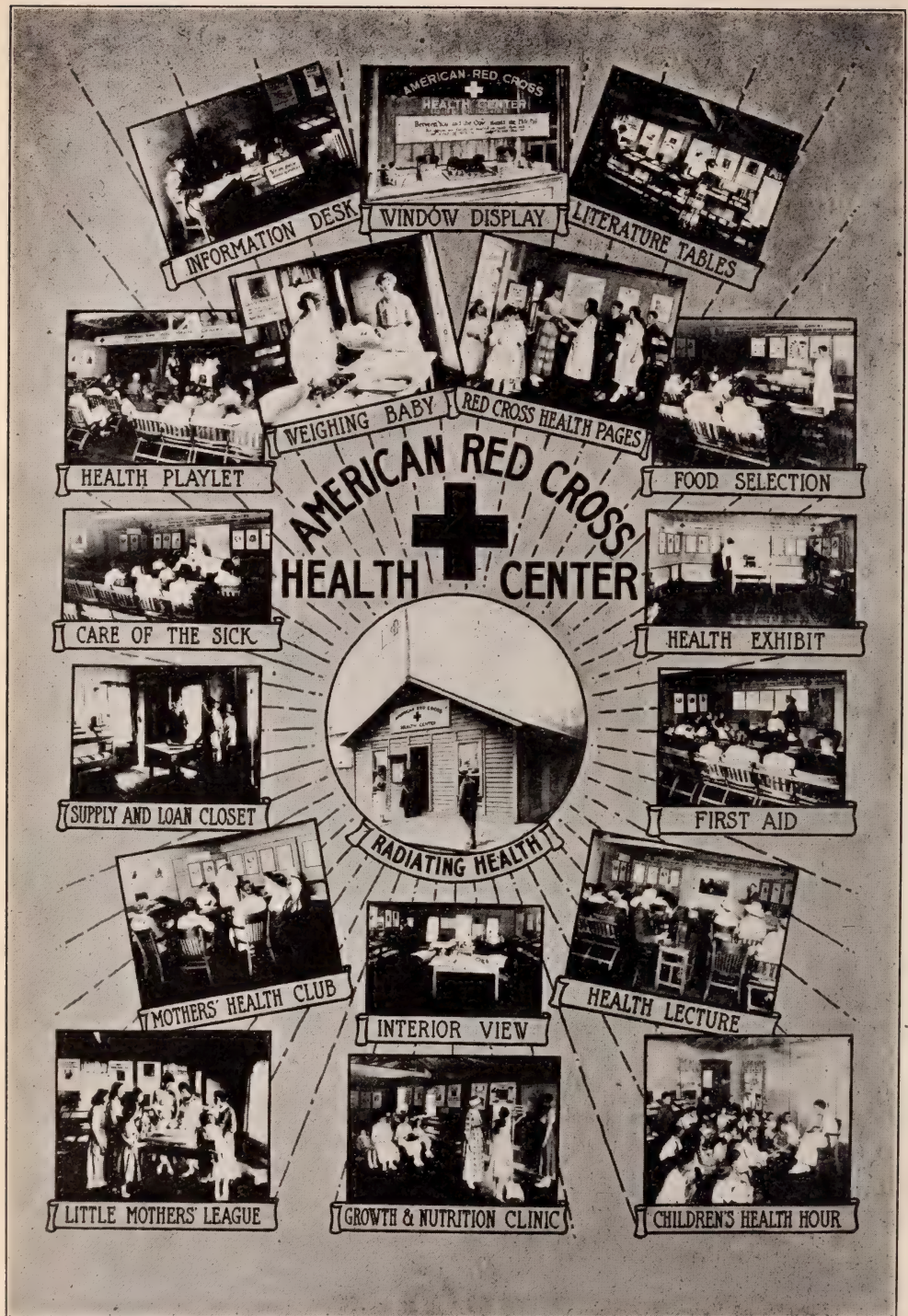
Owing to the negligence of four officers, those of Maine, South Carolina, Manitoba and New Brunswick, to reply to two repeated requests, it is impossible to make a complete statement of results in this most important health departmental matter for all of North America north of Mexico.

It is recommended that this committee report on alternate years only, inasmuch as in many states the Legislature meets biennially and not annually.

Respectfully submitted,
(Signed) EUGENE R. KELLEY,
W. S. LEATHERS,
JOHN T. BLACK,
JOHN S. FULTON.

SAVE THE NEWS LETTER

Members are urged to watch for the NEWS LETTER, the three numbers of which preceding the Semicentennial will all contain material of great importance to those who expect to attend. If you have not received your August-September NEWS LETTER, write for it now. It contains a coupon entitling you to reduced railroad fare, and information on hotels.



HOW A HEALTH CENTER FUNCTIONS

INFANT MORTALITY RATES FOR PARIS

THOMAS J. DUFFIELD

*Statistician, Commission for the Prevention
of Tuberculosis in France*

FOR some time the writer has been impressed with the fact that the ordinary method of computing the infant mortality rate,

$$\frac{\text{Deaths under one year}}{\text{Living Births}} \times 1000$$

was not applicable to the City of Paris, first, because of the great number of children placed *en nourrice*¹ outside of the city, and second, because a child born alive is recorded as stillborn if the child has died before the declaration of the birth is made at the registration office.²

Although the procedure is reasonable to one not acquainted with local conditions, it is to be regretted that the Quarterly Returns of the Registrar General of England and Wales, which is considered a reliable record of vital statistics and is quoted by public health authorities throughout the world, published without note (Return No. 288, 31 January, 1921), an infant mortality rate for Paris for 1920, based on the living births and the deaths under one year in the city, but taking no account whatever of the children leaving the city *en nourrice*.

It is believed that an infant mortality rate for Paris more nearly approaching the truth is obtained if, instead of employing the ordinary method, the following formula is used:

$$\frac{\text{Deaths under one year}}{\text{Living births—Infants placed en nourrice}} \times 1000$$

It is evident that this formula does not take into consideration the children brought into Paris from other departments, nor does it take into account ordinary migration to and from the city. It is generally believed that this movement is away from rather than toward the city and that differences in the infant mortality rate due to this factor would be practically negligible.

However, crude and corrected infant mortality rates for Paris computed first in the ordinary way, and second, based on the number of children remaining in Paris are here given for 1920 and the ten preceding years:

Infant Mortality Rates—Paris

	Crude Rate	Corrected Rate
1910	98	142
1911	118	171
1912	103	148
1913	99	145
1914	110	132
1915	124	153
1916	101	133
1917	96	128
1918	125	160
1919	104	129
1920	98	119

It should be explained that the number of children placed *en nourrice* is an official figure obtained from the declarations required of each *placement* at the time the birth is reported. Without a change in the regulations it will be impossible to correct the infant mortality rate of Paris for cases falling within the second group (now declared as still-born), but recently, M. Huber, Director of the French General Statistical Bureau, has published³ the results of his study of Infant Mortality by *départements*⁴ in France during 1919. In this study correction in the infant mortality rate has been made for the removal of children of the first group from one *département* to another by referring to the *département* of birth all deaths in France under 1 year of age, regardless of the place of death.

A translation of this paper is reproduced here:

"FRANCE: INFANT MORTALITY BY DÉPARTEMENTS

"Infant mortality rates are determined ordinarily on the basis of the number of deaths during a calendar year of children under one year of age, per 1000 living births for the same period. In the *Bulletin*⁵ of October, 1920, page 4, results (provisional figures) of the calculations thus made were shown for the 77 non-invaded French *départements* for the years 1913 to 1919.

"This calculation, acceptable for an entire country, cannot be employed without discussion when one wishes to apply it to an administrative district as small as a *département*, because of the removal of children placed *en nourrice* outside of the *département* of birth. For example, in Paris, before the war, approximately one-third of the new-born (15,000 out of 45,000) were placed *en nourrice* outside of Paris, and obviously increased the number of deaths from 0 to 1 year in the *départements* where they were placed.⁶

"In order to make a correct calculation of the infant mortality, it would be necessary to refer the number of deaths under 1 year registered in a *département* to the number of living births in the same *département*, increased by the number of new-born brought into the *département* and diminished by the number of infants born in the *département* but having left it shortly after birth.

"Lacking the necessary elements for these complete calculations, we have tried, however, to determine more exact Infant Mortality Rates by classifying the certificates of death from 0 to 1 year in each *département* according to the *département* of birth. It has been possible, then, to make a double disposition of the deaths under 1 year in each *département* (see Table I): First, the total number (B) of deaths under 1 year has been divided into two categories, namely, (a) children born in the *département*, and (b) children born in another; and, sec-

ond, in referring to the *département* of birth, the deaths under 1 year registered in other *départements* throughout the country, we have obtained the total deaths (R) under 1 year of the children born in a *département*, whether they died in the *département* where they were born or in another.

"We can calculate then per 1000 living births; first, a crude rate of infant mortality—deaths under 1 year registered in the *département* per thousand living births in the *département*, and, second, a corrected rate, deaths under 1 year of children born in a *département* (regardless of where the death was registered) per thousand living births in that *département*.

"This calculation has been made for the 77 non-invaded *départements*, but we have shown in Table I only the results for the Département of the Seine (Paris and vicinity)⁷ and the *départements* where a great number of children born in the Département of the Seine are placed *en nourrice*. These are composed in the great majority of the *enfants assistés*⁸. It will be seen that the differences between the crude and corrected rates are important.

"Naturally the mortality rate of infants born in the Département of the Seine is found to be greatly increased: from 103 to 134 per 1000, the deaths of infants born in the Département of the Seine and registered throughout the rest of France being charged against the births of the Seine. Inversely, the *départements* figuring in Table I which receive *en nourrice* a large number of the children born outside these *départements*, chiefly from the Département of the Seine, have a corrected rate much lower than the crude rate for the *département*. For the Nièvre, for example, the rate of infant mortality is thus lowered from 199 to 111; for the Sarthe from 193 to 153; for the Seine-et-Oise from 142 to 101, etc."

TABLE I—DEATHS UNDER 1 YEAR IN 1919 IN A FEW "DÉPARTEMENTS"

		Deaths under 1 year registered in the département			Deaths under 1 year born in the département			Rate of mortality per 1000 living births	
Living N.	Births	Born in the same	Born in another	Total B.	Dead in the same	Dead in another	Total R	Crude $\frac{R}{B} \times 1000$	Corrected $\frac{R}{N} \times 1000$
Seine	57,961	5,859	101	5,960	5,859	1,887	7,746	103	134
Allier	3,406	329	145	374	329	14	343	139	101
Eure-et-Loir	3,453	372	138	510	372	7	379	148	110
Loir-et-Cher	3,053	315	69	384	315	10	325	126	107
Loiret	4,392	422	64	486	422	7	429	111	98
Nièvre	2,655	287	240	527	287	10	297	199	111
Orne	3,684	404	113	517	404	16	420	140	114
Sarthe	2,605	836	248	1,084	836	21	857	193	153
Seine-et-Marne	4,084	371	122	493	371	12	383	121	94
Seine-et-Oise	10,294	989	471	1,460	989	51	1,040	142	101
Yonne	2,955	352	63	415	352	7	359	140	122

FOOT NOTES

(1) The term *en nourrice* does not imply that children are always placed with wet-nurses. As a matter of fact only a very small proportion of these children continue breast feeding.

(2) The French law requires that births shall be reported within three days of the date of birth. This requirement is obeyed except for an infinitely small number of births.

(3) *Bulletin de la Statistique Générale de la France*, January, 1921, page 159. Librairie Félix Alcan, Paris.

(4) Continental France is divided into 90 *départements* (including Alsace-Lorraine). A *département* is the administrative subdivision of the government corresponding most nearly to the county in England and the United States.

(5) *Bulletin de la Statistique Générale de la France*, October, 1920, page 4. Librairie Félix Alcan, Paris.

(6) To give an idea of the extent of this practice of placing children outside of the city

of Paris, the following figures, taken from the *Weekly Bulletin of the Bureau de Statistique Municipale*, are quoted:

Year	Living Births	Placed <i>en nourrice</i> outside Paris	Infant deaths (0-1 yr.) in Paris
1910	49,275	15,406	4,833
1911	48,962	15,121	5,766
1912	48,277	14,661	4,986
1913	48,746	15,354	4,842
1914	44,943	7,352	4,957
1915	30,360	5,689	3,784
1916	28,271	6,834	2,853
1917	32,830	8,258	3,152
1918	30,417	6,606	3,810
1919	38,992	7,488	4,063
1920	55,813	10,122	5,444

(7) It should be emphasized here that the Département of the Seine is not identical geographically with Paris. In addition to Paris there are 18 separate municipalities in the Département. The total population of the Seine, March, 1921, was 4,411,446, while that of Paris was 2,906,472.

(8) *Enfants assistés* is the term applied to foundlings, abandoned children, and others raised at the expense of the government.



THE PUBLIC HEALTH EXPOSITION

So many big features will crowd the days of the Semicentennial visitor that he is in danger of forgetting one of the biggest of them all—the Public Health Exposition, which will occupy 30,000 square feet, two entire floors, of the Grand Central Palace, Lexington Avenue, New York City. Both educational and commercial exhibits will have space, and the exposition will be open to the general public. Dr. C. E. North, 30 Church Street, New York, is director. Detailed announcements will be made in the NEWS LETTER preceding the meeting.

THEORIES CONCERNING THE CAUSATION OF DISEASE

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Minneapolis, Minn.*

[The following article was prepared some years ago by the author with the aid and assistance of Professor Selskar M. Gunn. It was intended to be one of a series of essays to be successive chapters in a volume for laymen treating in a general way of the problems of public health. This project, disturbed by the war, is not now likely to be completed, but since the presentation here is novel and represents considerable literary work, and is furthermore instructive, it has been taken by the JOURNAL for publication.]

THE DEMONIC THEORY

Man's common belief as to the causation of those "thousand ills which human flesh is heir to, has always been fairly compatible with the general state of human knowledge. It has always been pretty well related to the state of civilization and learning of the race or country. The savage of today and the races of antiquity are at one in their reliance on what is often spoken of as the demonic theory.

According to this theory, disease was produced by demons, one or more evil spirits had fixed their abode in the victim's body. The sick man was possessed of a devil. It was therefore logical to attempt to cure him by a system of incantation and sorcery, something calculated either to drive or coax the demon out. Disease was conceived of, not so much as a condition of the body itself, as an entity apart from man which dwelt with, or even replaced, the soul within its ordained temple. Savage or primitive imagination pictured a great world of things unseen and supernatural and from this world the fathers of the race drew the characters who were assigned to play the villains' parts in the great struggles of the mortal body with its invading

maladies. The association of religion with primitive medicine was very close. The priest or man of religion was usually the medicine man or doctor whose good offices were required for exorcising the evil spirits of disease.

Much has been written of the history of primitive belief in the demonic source of disease and of the superstitions connected with its cure. These superstitions and the practices they direct were often very fantastic and interesting. Unhappily some of them still survive in many of the most highly civilized countries. In our own country a great many of these beliefs are still practiced among the laity, especially among the illiterate of the more remote country places. Magnetic rings are still worn for the cure of rheumatism. Dried potatoes and horse-chestnuts are still wearing holes in many a trousers pocket, parents are still making their children the object of their little friends' ridicule by compelling them to wear bags of assafoetida to keep off communicable disease. Breaking a mirror, beginning a journey on Friday and a host of other ridiculous, inconsequential notions about ill luck are still unexploded in the minds of a great many people. Successful men of business and refined modern women, well informed about most things, continue to believe charlatans and quacks simply because they are not informed as well upon the subject of their own bodies, how they function and what will interfere with those functions, as they are about the workings of an automobile or even the principles of international law.

THE PUNITIVE THEORY

The association of religion with the cure and treatment of sickness probably had much to do with the evolution of what we may call the punitive theory of

disease; the belief that one's attitude toward the deity was responsible as a cause of sickness. From a period centuries prior to the Christian era down to the present time, there have been good people who have believed disease was a punishment meted out by an outraged God for the sins of the individual or the race.

The old Testament bears evidence of the currency of this notion among the Hebrews of Bible time. We are told that Jehovah is a jealous God, we find him recorded as rewarding his chosen people in divers ways and as sternly punishing them in his displeasure. In II Chronicles, Chapter XXI, there is related the story of a terrible plague in which the whole nation suffered for a sin of David and which was stayed only by David's repentance and the making of a sacrifice.

Following out this theory an afflicted individual or a plagued people instead of cajoling evil spirits, sought to be healed by propitiating the deity. Piety, repentance of sin, prayer and sacrifice were esteemed to be of great value. As we have seen, David built an altar and made sacrifices. Jehovah saw that he had turned from evil, the divine wrath was appeased and the plague was stayed.

In accepting this record of Hebrew life and religion literally, the early Christian Church quite logically found a place for the punitive theory of disease. Special prayers and services, special rituals and even special saints, who should intercede for the victims of disease, came into being. The heated religious controversies of the Dark Ages are full of references to this subject. The best means of petitioning relief from disease was regarded as a religious question. The terrible outbreaks of bubonic plague which ravaged Europe in the late mediæval and early modern period gave the church an occasion for directing its energies to this matter.

THE MIASMATIC THEORY

After long years we begin to emerge from the "thousand years without a

bath," which made up the brilliant Age of Chivalry, and begin to hear more about the miasmatic theory of disease. That curious notion of vapors or miasms coming up out of the ground and striking down the people with disease was not really born at the time above mentioned. It had been suggested long before by the Greeks and the Romans. After being buried for centuries under the stupendous weight of middle-age superstition and ignorance, this old idea began to revive. The people, who believed in this, said that the air arising from certain kinds of ground, especially low, swampy areas, was a cause of disease. Certain places were thus given a very evil reputation, because the ground was said to exude some invisible, insensible vapor, some miasm, which produced disease. Such places were spoken of as unhealthy spots. Not only was the air of swamps miasmatic but so also was night air. The clever fellows who invented miasms have been the unwitting cause of much trouble on the part of modern physicians, who cannot get out of their patients' heads the persistent old superstition that, if they breathe the night air, all sorts of trouble will result. The fact that malaria was prevalent in the vicinity of swampy land, and some evidence that people who ventured out in these swampy places were more likely to get the disease, lent plausibility to this theory and it has been an almost hopeless task to dislodge it from the minds of a great many people. It was the belief in the air as the causative agent that gave malaria its name, the Italian for "bad air." Somewhere in the inexhaustible fund of interesting information which he drew upon so freely to supplement his vivid imagination, Shakespeare found this miasmatic conception of disease, for, in his Julius Caesar he makes Portia say to Brutus, who has been walking in the garden in the small hours of the night,

"Is Brutus sick? and is it physical
To walk unbraced, and suck the humours

Of the dank morning? What! is Brutus sick,
And will he steal out of his wholesome bed

To dare the vile contagion of the night,
And tempt the rheumy, unpurged air?"

This quotation expresses the whole idea of miasms, namely that the air is contagious, that the "contagium" or cause of disease is in the very air itself.

The wise old heads who invented miasma were really beginning to be scientific after all. At least, they were searching for a material, natural cause, instead of blaming it all on either a god or a devil. They were great, in that they had the fundamentally important conception, that something cannot come out of nothing. Even the suggestion that night air in low swampy places was disease-laden was not so bad in one sense. The old physicians simply reckoned without the active anopheles who is so particularly blood-thirsty at night.

These three conceptions of the origin of disease are the ones that have been practically universal. They are the ones that have taken their place in the popular fancy and have woven themselves into the history of nations, that have left their mark upon the folk lore and the earlier literature of many peoples.

BEGINNINGS OF MEDICINE

The lore of medicine had its own sequence of more professional theories regarding the etiology of disease, generally more complex, but often no less fantastic and artificial in the light of science, as we now regard science, than the more simple beliefs which held sway in popular belief. This is not a history of medicine but a brief reference to some of the great names in the chronicle of the healing art and some of the theories which these men stand for cannot be omitted.

If we hark back to Greek mythology we think naturally of Aesculapius, the physician to the gods, and of his daughter Hygiea, the Goddess of Health, whose name is now applied to almost

everything that stands for the prevention of sickness and the preservation of the human species in a state of health. It did not take the invention of modern scientific apparatus or the discovery of bacteria to bring forth some very creditable theories. Men of learning always have and always will exercise their minds with speculation concerning those things from which the dark curtain of the unknown has never been drawn aside. When "demos" pronounces that this is the end, the scholar, the man of real genius, will say, "They think this is the end, I will find out what lies beyond."

On the Pillars of Hercules the ancients wrote, "Ne plus ultra," but there was one who refused to believe that there was the end of the world. Science has had many a Columbus. When the physicians of 50 years ago said, "spontaneous generation," Pasteur already saw beyond the reach of their vision, into the world of virus ferments. When men of inquiring mind cannot lay hold of facts with which to build they are apt to raise a structure of fancy more or less logical. This is what happened in medicine and upon this sort of basis grew much of the art of healing.

In the Golden Age of Athens, contemporary with Pericles and the illustrious fathers of so many arts, lived Hippocrates, "Father of Medicine." In that early time we find this man already recognizing disease as a process within the body, a process dependent upon natural causes and subject to natural laws. Hippocrates (460-370, B. C.) instituted personal treatment in the place of exorcising spirits, sacrificing to unresponsive deities and other "absent treatment." The Hippocratic treatment and the Hippocratic theories had little real science in them; they were speculative theories as we may readily understand. There was nothing of anatomy behind them worth the name; there was no knowledge of physiological function beyond that gathered by every man from the casual observation of the "modus

operandi" and habits of his own bodily organs, but they were valuable as the opening wedge for the recognition of natural as opposed to supernatural causes.

GALEN AND THE FOUR HUMOURS

The theoretical structure begun by Hippocrates, or at least based upon his observations, was elaborated and described by Galen (331-201 B. C.) and is known as the theory of the four humours. It was conceived that there are in the normal body four humours in a definite amount and proportion. Any excess of any one or any irregularity in their distribution disturbed the fine adjustment of the "going machine" and health was transformed to sickness. These humours were blood, phlegm, yellow bile and black bile. The idea of the humours is the real reason for the practice of blood-letting. It is hard for us with our present wonderful (though still grossly inadequate and incomplete) knowledge of human physiology and pathology to conceive a more inane method of treating a man already weakened with disease than this indiscriminate practice of blood-letting.

SYDENHAM'S TEACHINGS

Sydenham (1644-1689), often called the English Hippocrates, first gave us the important thought that there are different specific things which should be held responsible for different diseases. Sydenham held that disease was the result of the effort made by the body to throw off, to expel these *materies morbi*, the dead materials within it, which had made the trouble. The important result of Sydenham's studies was that a little close intelligent observation upon the part of the doctor is worth more than any amount of dosing administered in blind observance of a preconceived notion. It was a step away from the four humours and from other later, but quite as artificial, theories. In short, Sydenham did much to teach the medical profession the value and importance of "studying the case." Sydenham's theory,

more or less mixed up with the really inconsistent four humours, probably had much to do with the long popular belief in "peccant humours of the blood," the quaint notion which asserts that a rash or eruption must "come out" and the more it comes out the better for the patient. Dr. Woods Hutchinson describes this stage of medical progress in connection with a discussion of certain of the diseases of children in the following words. "They were regarded not merely by the laity but by grave and reverend physicians of the Dark Ages as a sort of necessary vital crisis peculiar and appropriate to each particular period of life—a sort of sweating out and erupting of 'peccant humours' of the blood, which must be gotten rid of or else the individual would not thrive. Incredible as it may seem, so far was this idea extended that the great Arabian physician-philosopher, Rhazes, actually included smallpox in this group, as the last of the 'crises of growth' which had to appear and have its way in young manhood or womanhood." Quaint little echoes of this simple faith still ring in the popular mind, as, for instance, in the wide-spread notion about the dangerousness of doing anything to check the eruption in measles and cause it to "strike in." Any mother in Israel will tell you, the first time you propose a bath or a wet pack to reduce the temperature in measles, that if you so much as touch water to the skin of that child it will "drive the rash in" and cause him to die in convulsions. And, of course, one of the commonest of a physician's memories is the expression of relief from the mother or aunt in many of these mild eruptive fevers, where the skin is well reddened and spotted: "Well anyway, doctor, it is a splendid thing to get the rash so well out." Until very recently it was no uncommon thing to hear the parents say, "There is a run of measles, but I suppose we might just as well have Johnnie go on to school and get the disease and have done there." It seems to be the real mild eruption this

time." Of course this view was scientifically shattered two or more decades ago by our recognition of the infectious nature of these diseases, but practically its hold on the public mind constitutes one of the most serious and vital obstacles in the way of the health-officer when he endeavors to attack and break up an epidemic of measles, whooping-cough, or chicken-pox."

HAHNEMANN AND HOMOEOPATHY

Homeopathy, in its essentials, is founded on the theory of Hahnemann, who urged that disease is due to some spiritual influence, that it consists of its symptoms taken collectively, that it may be treated by the removal of those symptoms and that this result is to be obtained by introducing into the body of the sick person, in small quantities, such drugs as have been found to produce the identical symptoms in a well person. The whole fabric of this scheme is highly artificial and it was put forward by a man who was a theorist first and an observer and student of the human body and its ways only incidentally. In our day, when facts count for what they are and not for what we should like to have them, it is naturally unsatisfactory in its whole structure. The school of homeopathy, as it remains with us today, has almost, if not entirely, shaken off this fanciful chain of reasoning by which, under Hahnemann, it was bound up with the empiricism of an earlier and even less enlightened period and the homeopathic physicians of today actually make use of much the same methods in diagnosis and treatment of disease as the so-called "regular" or "old school" physicians. The true physician,

under whatever name or creed he may have entered the communion of the healing art, must in this day deal in fact, not theory. He must be, above all things, broad-minded and well informed; he must be ready to accept and to employ the discoveries of science as soon as their therapeutic value be established upon a firm basis in accordance with the most reliable tests of modern experimental medicine.

EARLY SCIENTISTS

There are a few other names which should not be omitted in bringing the story within reach of modern science. Among these are Vesalius (1514-1564), who made anatomy a science; Harvey (1578-1657), mentioned in every school physiology, who discovered the circulation of the blood and first announced the function of the arteries, till then believed to be air passages from the fact that they were found empty after death; and Leeuwenhoek (1632-1723), whose invention of the microscope opened to scientific investigators the hitherto unseen world of the infinitely small in which develop the causes of many of the ills that beset us. Kircher and Malpighi should be mentioned, the technicians who gave the first suggestion that the newly found microscope was to be the real discoverer of the causes of many of the diseases; and Jenner (1749-1823), famous for the introduction of the first scientific use of a biological prophylactic, inoculation. These men paved the way, so to speak, for the great modern leaders in bacteriology, Pasteur, Lister and Koch.



Are you coming to the Institute? Whether you are or not, you will be interested in the account of it and schedule of demonstrations published on pages 928-930, this issue.

PRELIMINARY REPORT ON THE PROPHYLAXIS OF WHOOPING COUGH

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THE study of whooping cough statistics during its spread through the schools of Akron convinced me three years ago that methods of quarantining whooping cough had very little effect in limiting the spread of the disease. My own experience in treating whooping cough with bacterin, dating from eight years ago, and the use of bacterin in prophylaxis for exposed non-immune children in the same family, led me to feel that the only way to control whooping cough in schools was to immunize the non-immune children who had been exposed.

About two years ago, when the new regulations for the control of whooping cough went into effect, requiring quarantine for exposed non-immune children for 14 days, I felt that better control would be had if the children were immunized and remained in school under the supervision of the teachers and nurses. Accordingly, I notified parents that the children who took the immunizing doses would not be excluded, if not coughing.

At that time there were about 50 cases in Findley school and practically all children who had not had whooping cough were immunized by their own physicians or by the school physicians. Within a month we found that we were not getting any more whooping cough cases in the Findley district. At about the same time we carried out the same process in Caldwell district, which was at that time our most serious focus of the disease. Results were similar. There were no more new cases after about a month. A few children in both schools who were showing initial symptoms developed mild cases of the disease, but none who had no

symptoms at the time of receiving the first immunizing dose developed the disease. The nurses have since checked up on the cases of whooping cough from these two schools and have found no case among the immunized children. The immunity apparently has lasted two years, as we have, during 1920-1921, had many cases of whooping cough in these schools among the new children who were not immunized two years ago.

During 1920 we prepared to extend immunizing work and for the purpose had some bacterin made up of a strength of 5 billion Bordet bacilli to one mil. Owing to scarlet fever, influenza and smallpox outbreaks, no use was made of this bacterin until December, 1920. In December, 1920, an epidemic of whooping cough having started in Spicer school, we used this bacterin in doses of $2\frac{1}{2}$ billion followed by 4 billion three days later. Immunization covered all rooms in the building on a purely voluntary basis. About 90 children were immunized by the school physicians. Two of these 90 who subsequently developed mild cases of whooping cough were found on investigation in the household to have been in the first stage of whooping cough at the time they received their first dose. Only 3 new cases of whooping cough occurred in Spicer district during January and February, 1921. Part of the immunization in this school was done with plain Bordet 2 billion to the mil. and part with mixed bacterin containing the same strength of Bordet. It was observed that no local or systemic reactions occurred except in those children who subsequently developed the disease, even from the dose of 4 billion. I should therefore feel inclined to believe that the proper

strength for either prophylaxis or treatment is at least 5 billion to the mil. This observation is based on the use of Bordet mixtures of strengths from 50 million to the mil. up to 5 billion to the mil. I feel the failures with Bordet bacillus in the treatment of cases, of which we have many among indigent families, are due entirely to insufficient dosage administered at too-long intervals. A safe principle in the use of whooping cough bacterin is, "the younger the child, the larger the dose required." I have repeatedly observed, when treating 3 or more cases in the same family, that the oldest child would clear up completely on three injections, whereas the baby would require four or five injections with a maximum dosage of not less than 4 billion before the disease was cured. However, no case has failed to respond if the injection was given not later than 48 hours after the preceding one and the dose doubled each time; for example, 0.5 mil., 1 mil., and 2 mil. of a bacterin containing 2 billion Bordet bacilli per mil.

I am at present attempting to control whooping cough in the schools by giving the parents of all non-immune children in any school in which a case has appeared the choice of getting the children immunized by their own physician, if they are able to pay for his services, or by the school physician, if they are unable to pay. I feel that the method is sufficiently promising to be tried out on a large scale in order to accumulate sufficient data on which to base definite conclusions as to the value of the procedure. I reserve the right strictly to enforce the regulation excluding for two weeks non-immune children in any room in the school, if the parents refuse to have them immunized, for experience has shown that whooping cough, like smallpox, spreads throughout the school owing to contacts made in the halls, on the playgrounds and on the

streets. Fortunately, most parents prefer to have their children immunized, as they realize the very serious nature of the disease and the deleterious effects which so often follow a severe and protracted case. It is noteworthy, as principals and teachers invariably remarked when watching the work of the school physicians, that the children are very brave about taking an injection and return cheerfully for the second injection. I have preferred to use two rather large injections 3 days apart rather than 3 injections 5 to 7 days apart. I use 1 billion and 1.6 billion and believe that it probably does the work as well as 1 billion, 2 billion, and 2 billion at the longer intervals mentioned; for I think that it catches the wave of increasing resistance near the peak before the decline has begun and pushes the peak high enough to establish a positive immunity. I reached this conclusion from observation of the effects of mixtures of the pus cocci in local infections, having observed that in acute infections it was safe to administer double the initial dose in 24 hours, and that this technic gave results in positively limiting and aborting the acute infection such as could not be obtained by giving small or moderate doses with longer intervals of time between the injections.

Summary—Experience seems to show that sufficiently large doses of Bordet bacilli establish a positive immunity against whooping cough and check the spread of the disease in the public schools.

Whooping cough bacterin is the only therapeutic measure worthy of consideration in the treatment of the disease. Failures are due entirely to insufficient, timid dosage at too-long intervals.

I believe that public health authorities are justified in promoting immunization against whooping cough just as they are urging immunization against typhoid fever.

HEALTH CENTERS AS SEEN BY A PUBLIC HEALTH NURSE

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THERE is not the slightest doubt that the average citizen of today is more interested in the subject of public health than he was ten or even five years ago. Ten years ago very few of the rank and file had even begun to think of health as a public responsibility. During the World War the men of this country were subjected to a general physical examination, and the findings were, to say the least, somewhat disconcerting. Because of this the American people are ready to give attention and thought to the task of finding a remedy for existing conditions.

Just how the prevalence of physical incompetence is to be eradicated and a better state of health put in its place is still an open question, the health center being one of the focussing points around which many ideas are formed.

My own interest in a centralized health propaganda dates back to 1912, when I had the good fortune to be offered an opportunity to help in the planning of a health center in an industrial town of eastern Massachusetts. The town population numbered about fifteen thousand, a third of which was foreign born. The plan from the beginning was to establish a health center which should meet the requirements of the whole town and not just those of a specially selected group. As might be expected, it was necessary to dispose of the old traditions upon which many of the so-called social welfare organizations are founded. This was a hard but not a hopeless task. The idea most difficult to get rid of was that the care of the sick is the only legitimate kind of health work.

The cost of the experiment was an important consideration, and private money was the only possible source of income for such a venture. Another important decision to make was where the work of

the health center should begin and where it should stop, and it was soon learned that if the center were really to serve the people the words "Public Health" must be given a very broad interpretation. Our center must be made a part of the civic interests of the town. Our interest in the baby must include the parents—where they work, how they live, what they play and where. While the resources of our own health center must of necessity be limited, the center must be so linked up with other sources of information and helpfulness that the service it offers would be of real value.

What really happened was that this health center which I was permitted to help in launching soon became a sort of civic laboratory, where one enterprise after another was taken up, and after it was tried out and approved was taken over by the town government to be absorbed into some branch of the administration. Occasionally it would be advisable to keep some special piece of work in the hands of the trained workers of our own organization, and in such cases the worker was made the official agent. For four years the work progressed, and when the war swept in upon us the center was still in an experimental stage, although much permanent work had been accomplished.

I was once more favored by fortune in being associated with the American Red Cross in the spring of 1919, when under the direction of Dr. Farrand this organization took up for its peace-time program the launching of the health center as a nation-wide institution. The plan was to induce the local Red Cross chapters throughout the country to establish or help to establish within their own communities good public health centers, and the results of this campaign have been most interesting. Without going

into the details of the whole movement, it may be said here that a great variety of health centers are now in existence. The type most common is the nursing center, which is very like the well-known Visiting Nurse Association, except that less stress is laid upon the care of the sick and more upon the protection of the well. In these centers the visiting nurse is (or should be) a public health nurse, doing both school work and board of health work, as well as child welfare and bedside nursing. The health center itself is in most cases a room in some public building, where the nurse has her headquarters, occasionally the Red Cross Home Service worker has a desk in the same office. The Atlantic Division of the Red Cross has many such centers, while in the New England Division the Red Cross in many instances has pooled its resources with various other local and state agencies. In the Middle West and South the county health center is much in favor. This is a much larger piece of work and each center usually represents all of the health agencies of the county and state. In the cities the health center as a rule occupies a separate building, which is used for various health activities, each having office space and sometimes rooms for clinics. The object of this is for the purposes of convenience, economy and general efficiency, to bring together under one roof all organizations which affect each other.

My present professional interests are once again connected with the work of a health center, this time in an Eastern university city with a population of 165,000. The contrast between the small town center and the city center is most interesting to observe. In the city a carefully selected district is set apart and a most careful survey is made in order that all available information may be at hand. The district includes three wards of the city with a population of 27,000, 75% of the people being Italian, and the other 25% a mixture of nationalities, with very few Americans or English-speaking people.

This district is divided into seven sub-districts, with seven public health nurses and two supervising nurses assigned to the work by the City Visiting Nurses' Association. These nurses are expected to do general nursing, but no school work, two nurses being assigned by the Board of Health for the health center district. The contagious work is also under the Board of Health. Five child welfare clinics are a part of the nursing program. The Home Economics Department of the Visiting Nurses' Association is giving one-third time of one of its workers to the health center district. Her work is in the homes, with the mothers, and with nutrition classes for under-nourished children, which are held in the social centers within the district.

In the center of the district is the Keep Well House. Here is to be found the office of the director of the demonstration, with a full-time physician in whom is vested the authority of the Board of Health, also a part-time woman physician who carries on the pre-natal clinics. A sanitary inspector gives his full time to this district, working from the health center, but engaged by the Board of Health. Free medical examination is given any one who may wish to apply, but all cases are referred for treatment to the dispensaries of the city. The dispensaries also do the free maternity work in the homes. Besides the 14 full-time and 7 part-time health center staff workers, there are also workers in the district, representatives of the organized charities, the Crippled Children's Aid, the Mental Hygiene Association, the Red Cross Social Service, the Catholic and Jewish charities, and the usual number of churches. Within this district are two neighborhood houses, one large day nursery, the Salvation Army and the city headquarters of the Y. W. C. A.

This center, like that of the small town, depends upon private money for its support, with the exception of what is given by the Board of Health. Unlike the smaller center, there is no special

civic interest. Indeed, one might say that the demonstration as a whole is so highly specialized that it is beyond the comprehension of the ordinary citizen, and even less intelligible to the non-English-speaking residents of the health center district. The demonstration is still in its infancy. How far reaching its future work will be on one can foretell, but a better standard of health and stat-

istics that will be of great value in estimating the economic waste of sickness are among the things hoped for.

All of the many health center experiments are but straws floating upon the stream and merely show the direction of the current. America is awake, and with her usual vigor she is bent on seeing to it that public health shall be established and maintained.



A THIRD MEASURING ROD IN MORTALITY RATES

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CERTAIN conclusions were reached in a previous article,¹ namely:

1. Crude mortality rates, as shown by the Bureau of the Census, are in general measurable by the amounts of the filth-borne diseases, plus the respiratory diseases, plus a constant of 5.5, which latter figure was expressed as irreducible.

2. There were certain discrepancies as follows: (a) The possibility that higher estimated rates than the recorded represented an excessive estimated population. (b) The possibility that low estimated rates arose from the irregular distribution of unknown and of "all other" diseases. (c) The possibility that there was an exception to the higher recorded rate of states over cities, although the estimated rate showed no such exception.

It is now possible to show that the key to the discrepancies, other than the point raised as to over-estimated population, lies in the estimation of the constant, 5.5. The revised statistics for the years 1915-1917 as published in the 1919 Report of Mortality Statistics, Bureau of the Census, with population estimates based on the census of 1910 and the prelimi-

nary figures for 1920, show that for the years mentioned and given in our previous article, 1915-1917, New York City had yearly rates of at least 1 per 1,000 population in excess of the previously recorded rates, thereby more nearly approximating our higher estimated rates. Such may be seen in the appended table. The remainder of the excess of the estimated figures over the recorded, whether revised by the recent statistics or not, lies in the consideration of the constant 5.5.

A study of the vital statistics over the years recorded shows that the constant 5.5 in the cities of the older registration area, and states as well, is year after year generally approximated by the sum of the amounts of the rates for cancer, violence, and of all other diseases. Using the rates for all other diseases multiplied by the constant 2.4, we have very generally for the various years and for all areas or specific parts of the registration area that measure of the previously used figure 5.5 which fulfills the following conditions:

1. Takes up the discrepancies of lower recorded over higher estimated rates.

2. Explains crude mortality rates of the country under 5 per 1,000 population.

¹Lewis, Dwight M., Measuring Rods of Mortality Rates, *American Journal Public Health*, September, 1921.

3. Would seem to be an indicator of where a portion of one of the other measuring rods (of filth-borne diseases, for example) is erroneously contained. This possibility is also well shown in the appended table.

There stands out, then, rather strikingly the fact that the higher estimated mortality rates are nearer than the recorded ones during the later intercensal years as shown in our previous article, to the figures shown by the revised recorded rates based on the census following. Yet, when we bring into line estimated rates for the years 1918-1919 as shown by the recorded rates based on the 1920 census, whether the figure 5.5 is used as the constant or its found measure, "all other diseases," we find very generally a discrepancy between the recorded and estimated rates. It would seem that where there are specific rates for influenza or for measles of approximately 100 per 100,000 of population or more, such epidemic figures make for excessive rates when the constant 2.6 is used. Wide sampling of states and cities as far back as 1909 shows the system accurate whether in terms of the irreducible 5.5 or its new substitute, 2.4 times "all other diseases," and approximately so for the years 1900-1909, during which period all other respiratory diseases are not separable, nor the infant diarrhea under age two from total diarrhea, and the system holds for the year 1919 where influenza is less than the epidemic figure mentioned. Whether, then, in terms of measles or of influenza, such epidemic rates are evidence of the necessity of reduction of the constant 2.6, which otherwise holds true for respiratory diseases. A figure 1.6 gives accurate results for the years 1918-1919 where the epidemic rate for influenza is, as generally, in excess of 100 per 100,000 population. For the year 1918, all the estimated and recorded rates of all the cities and for the total cities of registration states given in the census report,

with the one exception of Grand Rapids, are in accord with such a modification. Although the rate for influenza for that city was just over 100, the estimated rate, using 2.6 for the constant for the respiratory rate, is closer to the recorded rate.

The table on following page shows the contrasting rates of the original census figures based on the estimated increase of population for the year as shown by the 1900 and 1910 census and the revised rates as recently published based on the 1920 census. As illustrative of the discrepancies we have mentioned, the original rates include the recorded, the estimated one based on the irreducible 5.5 (Est. d. 1) and the estimated rate where that figure 5.5 is replaced by the third measuring rod, 2.4 times "all other diseases" (Est. d. 2).

Of especial interest and value is the estimation of the mortality rates of the rural counties of, for example, California and Colorado, where, for reason of rates less than 5 per 1,000 population, we are warned against accepting those rates as responsible. The three measures of respiratory diseases, filth-borne and "all other diseases," when compared with the crude reported rates, are very generally in accord. Here the key largely lies in replacing the irreducible 5.5 with its proper measure.

Beyond the elicitation of the discrepancies found in the former article, in great part by means of the third measure replacing what was considered a possible irreducible, we have evidence that such a measure is of further value. In the case of Memphis in 1917, as contrasted with the years 1918-1919, and similarly for Birmingham, the estimated rates are in excess of the recorded. It would seem possible that a large part of the unusual rate due to "all other diseases" for that year, 1917, for both cities, contained such a content of filth-borne diseases as would, if corrected, have reduced the estimated rates to the agreement of the years 1918-1919 and of

other similar cities of the South where our system holds true.

In sum, there would seem to be accurate evidence of the possibility of measuring crude mortality rates as to the content of filth-borne diseases, of res-

piratory diseases, and of what would seem to be dependent on injuries and violence. There would seem as well to be cross checks as to where excesses of variations of each of the triad may be placed.

TABLE OF RECORDED AND ESTIMATED MORTALITY RATES

Area, State or City	Year	Original Rates			Revised Rates	
		Actual	Est'd. 1	2	Actual	Est'd. 2
U. S. Registration Area.....	1917	14.165	14.274	14.275	14.258	14.495
Cities in Registration States.....	1917	15.151	15.046	15.142	.....	.....
Minnesota	1917	11.737	12.079	11.345	.....	.....
Minneapolis	1917	11.817	12.137	11.457	.....	.....
New York	1917	14.389	15.276	14.459	.....	.....
New York City.....	1917	13.685	15.351	14.170	14.558	15.095
Massachusetts	1917	14.913	14.388	14.614	.....	.....
Boston	1917	16.546	15.941	16.892	17.388	18.172
Connecticut	1917	17.065	16.749	17.179	.....	.....
New Haven	1917	17.094	16.319	16.807	16.809	16.513
Manchester, N. H.....	1917	8.449	12.243	8.567	.....	.....
Maryland	1917	18.482	15.704	17.145	.....	.....
Baltimore	1917	18.434	17.924	19.242	17.742	17.983
Washington (state)	1917	7.598	9.468	7.571	9.383	9.367
Seattle	1917	6.904	8.520	6.536	8.566	8.120
Detroit	1917	18.940	22.861	24.542	13.587	13.941
Montclair, N. J.....	1917	9.266	12.060	9.611	.....	.....
Memphis	1917	19.878	19.170	23.073	20.773	24.053
Memphis	1918	.....	.....	.....	24.551	25.327
Memphis	1919	.....	.....	.....	21.448	19.291
Birmingham	1917	20.220	20.068	24.296	22.973	26.502
Birmingham	1918	.....	.....	.....	25.287	26.320
Birmingham	1919	.....	.....	.....	16.652	14.862
Chicago	1917	14.923	15.838	15.551	14.792	14.207
Chicago	1918	.....	.....	.....	17.061	15.044
Chicago	1919	.....	.....	.....	12.521	12.438



RAILROAD RATES

Complete information on travel to the Fiftieth Annual Meeting is contained in the August-September NEWS LETTER, as well as a coupon by which you can secure your identification certificate for the reduced fares. If you have not received your copy, write for it. Some stopover privileges will be allowed. On this and all other railroad matters, consult your local passenger agent.

SANITARY CONTROL IN THE MANUFACTURE OF FOODS AND ITS ECONOMIC IMPORTANCE

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THE centralized manufacture of foods in large factories is a development of recent years only, and an economic feature having no parallel in previous history. Packaged food is an innovation of the last fifty years and chiefly even of the last twenty-five years. Until well within the last half century, foods were produced and consumed directly, and if held for any appreciable time, were stored and transported in their original state, just as potatoes are now stored for a limited time and transported in the raw condition.

Within recent years two fundamental changes have taken place in the production, preparation and handling of foods; these developments have had such effects on centralization of population, and dependence on manufactured foods as to make them of vital importance.

The first development has been in the preservation of foods so as to permit their storage for indefinite periods and their transportation. This is essentially the dehydrating and canning industry.

The second development has been in the transportation, purification and synthesis of foods. This is a natural though rapid outgrowth of the canning industry. The extensive production of foodstuffs from natural materials never before available for use as foods marks the beginning of an industrial development of inestimable extent. The production of sugar from sugar beets, the making of syrup from starch or sawdust and the chemical production of edible fats from inedible fats are typical examples of this course of development.

The manufacture of foods has been responsible for great centralization of population, for the continued growth of cities, and for an increase in population

which could not have been supported without such manufactured foods. Now, the public depends on factories for its existence. Manufactured foods are not a substitute or only a means for storage from season to season, but are a necessity for existence.

Only a few years ago, canned and manufactured foods were regarded by the public as substitutes and as inferior to the fresh foods and to home-canned or prepared foods. Factory-prepared pickles and catsup were once accepted for use only when a home-canned supply could not be obtained. Factory-made syrup was thought injurious to health, and almost dangerous to use. Canned milk was once considered only an imitation made up of materials which never came from a cow, and a substitute to be used only in extreme necessity.

This tendency of the public to mistrust manufactured foods was undoubtedly induced by the poor methods of manufacture used in some of the earlier food factories. Adulteration of foods by some unscrupulous manufacturers before the beginning of government food control undoubtedly had a decided effect in this direction. But the principal reason for doubting the purity, cleanliness and wholesomeness of the earlier canned foods was the lack of cleanliness and proper sanitary control in some factories.

Lack of extreme cleanliness in factories in many cases would not injure the product at all, but the psychology of the human individual is peculiar in this respect. The average person is much more critical about the handling of food in large quantities than in small quantities. Cleanliness in a kitchen would not be cleanliness in a factory. Home-canned foods may be put up in a kitchen in

which the cleanliness is really questionable, and their quality will never be doubted. But the same housekeeper would not knowingly buy canned foods put up in a factory, if the factory were in the same condition as her kitchen. In the factory, the bulk of material handled magnifies all refuse and dirt so that it is much more evident.

A food factory must be as clean and sanitary as a hospital should be. Those rooms in which the food is processed should be as clean as the operating room of the hospital. Nearly all large factories now come up to this standard.

The sanitary control of a food factory embraces three other features besides cleanliness of the factory itself. These are, bacterial and chemical inspection of the raw materials and similar inspection and control in the processing as well as of the finished product. The raw materials and the manufactured products are subjected to scientific examination and control which could not be attempted in small scale or home manufacture.

SANITARY CONTROL OF RAW PRODUCTS

The production of canned milk furnishes a good example of scientific control of the raw product, and illustrates the advantages of large scale manufacture.

The manufacturer of any milk product is compelled, if he desires to make a high-grade product, or even any product at all, to use the most efficient and rigid sanitary control of his raw material. It is impossible to make evaporated milk out of anything except strictly normal fresh milk. If the milk is dirty or is from diseased cows, it will not stand sterilizing, but will coagulate in the process. The margin of permissible deterioration of the raw product is very narrow, and the processing is even a more rigid test for normality and freshness of the milk than the bacterial examinations commonly made by city laboratories of their milk supplies. If the manufacturer of evaporated milk receives any appreciable percentage of

abnormal milk he very quickly finds evidence of it. His problem is then to prevent receiving such milk and further to instruct the producer how to avoid contaminated or abnormal milk.

The thoroughness of sanitary inspection of fresh milk received by condenseries insures to the public a finished product of uniformity and quality not to be found even in the highest grade market milk. City and state departments of health make a practice of examining samples of milk sold, taking samples from each dealer at irregular intervals and making bacteria counts. In general, market milk is inspected for adulteration, and total bacteria only. In contrast to this, large condenseries make a regular practice of inspecting every can of milk received, and the complete inspections are made every day. The milk is not examined for bacteria by the plate culture method as used in city and government laboratories but is first subjected to a sensitive coagulation test which detects not only bacteria, but their products. The method also detects milk from cows having any disease of the milk tract, and indicates the presence of and extent of souring, if any. These coagulation tests are made before the milk is received, and any milk found abnormal is rejected or held for more extended investigation. A further investigation of milk found abnormal by coagulation tests is made for the purpose of advising the producer so that he may remedy the trouble. These further examinations are not limited to bacteria counts, but include microscopic examination by special methods which show the presence of disease, if any, and the kind of disease, and include rapid methods for the identification of bacteria of certain groups, whereby the producer can be informed as to where the contamination, if any, got into his milk. This work involves the use of highly specialized methods of bacteriology developed in the industry. A remarkable feature of this inspection is the speed with which the examination is made.

Complete bacteriological examination of milk as heretofore made in most milk inspection laboratories require at least two days of time and a dozen samples constitute a day's work for the bacteriologist. By the use of improved equipment and more rapid methods the bacteriologists in the condensed milk industry make complete examination of milk, including bacteria counts, inside of one day, and instead of examining a dozen samples per day, each man examines from 150 to 300 per day and is then able to tell not only whether the milk is up to standard or not, but specifically what is the matter with it if it is abnor-

mal. This is an example of specialized sanitary control and the application of one of the newest sciences, bacteriology, in the service of the public.

The development of scientific control of raw food materials, of the processing and the inspection of the finished product brought manufactured foods into the position where they are not regarded as substitutes for fresh foods, but as essentials. Manufactured foods are no longer used only when the fresh supply is not at hand, but are preferred by the majority of people, because of their purity and uniformity, and the guarantee of absolute cleanliness in their production.



SANITATION OF FRUIT AND VEGETABLE CANNERIES

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Read before Food and Drugs Section, American Public Health Association, at San Francisco, Cal., September 13, 1920

THE mechanical and the educational divisions of the subject of canning are each of them important factors in effecting the excellent sanitary conditions under which the vast majority of the fruit and vegetable canneries operate.

MECHANICAL

First there is the effect of eliminating hand work by the invention of machines. As in other great industries with the ever-decreasing supply of labor and the ever-increasing demand for production, there has been within the past few years marked improvement in the machinery used by the industry.

Only a few years ago peaches were peeled by the slow and tedious process commonly followed by the housewife, that of handling the individual peach and removing the peel with a knife. Today such a practice would render impossible the handling of the thousands of tons of peaches which go into the can, and as a result of this demand we find the lye

method in general use all over the world. It is an ordinary thing to find factories canning from 75 to 150 tons of peaches per day under most sanitary conditions. After the pit is removed the peaches need not be touched by human hands except to place them in the cans.

Perhaps the most striking example of the preparation of food entirely by machinery is found in the packing of peas. Peas are mowed in the fields, thrashed and hulled by machines, delivered to the graders by conveyors, where the hard peas are culled out, and the various sizes separated. They are then filled into the cans by machinery and go on to the consumer without having been touched once by human hands. When one considers that there are hundreds of millions of cans packed with peas in this manner the vastness of this procedure is apparent.

The advent of the so-called sanitary can probably marks the greatest forward stride of the industry in its mechanical

development, as this can, by the very nature of its construction, without the use of solder inside and the fact that it can be hermetically sealed without solder, gives the industry a container which does not easily catch dust in long shipment and one which may be easily washed. The machine which crimps the cover on these cans at the rate of 120 per minute represents the finest piece of machinery found in the fruit and vegetable canneries, and has necessitated an increase in the capacity of other machines so that the speed is kept to a maximum. The value of these mechanical improvements in providing ideal conditions for sanitation are very apparent since they permit the handling of tremendous quantities of raw material at great speed, which, after all, is the essential thing in producing a food commodity from a perishable raw product.

In general every part of the fruit and vegetable canning industry has kept pace with the mechanical development so that today a large portion of our food supply is produced in modern sanitary buildings, provided with concrete floors, flooded with direct sun light, the interior painted white, properly screened against the invasion of flies, bees and other insects, with adjoining grounds oiled or regularly sprinkled with water to keep down dust.

It has been said "that the most essential thing to a cannery is a tremendous water supply," and this has been given most serious consideration by canners everywhere. To appreciate this fully one can imagine the importance of water when there is required from 5,000 to 20,000 gallons of water for a single wash-up of a cannery. Every factory does this after the day's run, and indeed many factories wash-up morning, noon and night. The use of germicides and disinfectants in canning factories was discontinued years ago, as it was found unnecessary to employ these agents where plenty of water and steam were used. It is indeed worth the time of any

layman to visit a cannery during the wash-up period, as the effort exerted to close up a clean house for the night appeals to everyone.

EDUCATIONAL

As in all problems of sanitation, the educational feature stands out as being the most vital factor to be considered. It is not only the most important factor but is usually the most difficult to handle.

The fruit and vegetable canning industry has made remarkable progress within the past few years, and today it is the exception rather than the rule to find a canner who is not fairly well versed in the consequences of running a plant under faulty sanitary conditions. Indeed his knowledge of sanitation is much superior to that of the well informed layman. To produce this situation there has been required the expenditure of hundreds of thousands of dollars by the industry at large. The work of the U. S. Bureau of Chemistry has been exceedingly helpful and a large amount of the success met with in having the industry appreciate sanitation is due to the fearless and tireless leaders of the Bureau of Chemistry.

The preparation and distribution of bulletins and other propaganda along this line has been directed by the National Canners Association for a number of years, until today we have the Sanitation Inspection Service of the Association operating throughout the entire United States, maintaining twenty-one offices and supervising the manufacturing of food products in several hundred of the best canneries in the land. This work involves the careful inspection of the plant and of the raw and finished products. If inspection is found to be in accordance with rules set down by the association, the product is entitled to carry the Emblem of Inspection on its label or can, which emblem is generally being accepted by consumers as a badge of merit and an emblem of superiority.

EDITORIAL SECTION

AMERICAN JOURNAL OF PUBLIC HEALTH

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HARVARD'S NEW SCHOOL OF PUBLIC HEALTH

Only those who understand the real value of health education with resultant proper health habits as the most effective means of preventing disease can thoroughly appreciate the full significance to the United States, and, indeed, to the world in general, of the gift of \$1,785,000 recently made by the Rockefeller Foundation to Harvard University for a School of Public Health.

When one realizes that (according to a life span chart of the Life Extension Institute) the average expectation of life at birth, despite a gradual increase since the era of exact record-keeping began, is still but fifty-one years; that the average period of productive activity is only forty-two years, while the average period of physical freedom and full vigor is only from eighteen to thirty-one years, a new emphasis is placed upon the pressing need for more health experts such as can be trained in a thoroughly equipped institution like that made possible by the Rockefeller endowment.

According to the announcement made on August 22, "The new school will provide opportunities for research, will unify existing courses, and will offer new or extended teaching facilities in public health administration, vital statistics, immunology, bacteriology, medical zoölogy, physiological hygiene, and communicable diseases."

The plans include coöperation with various laboratories, hospitals, and public health agencies in Boston, thus affording students unusual opportunities for first-hand investigation and practical field experience. One of the most important phases of the program, particularly at the moment, when conditions of industrial life are so critical, is the practical experience in industrial hygiene which will be afforded through coöperative relations with certain manufacturing and commercial corporations.

While the school will have its headquarters in a well-equipped building of its own, and will have its own separate faculty and administration, it will be closely related to other divisions of the University, especially the Medical School. Certain heads of departments will be members of both faculties, and various laboratories and lecture rooms will be used in common.

In addition to the initial gift to the school of \$1,785,000, provision has been made for further gifts in the future, as may be required, of an amount not exceeding \$500,000.

The endowment is one of many made during the last few years for public health and medical education by the Rockefeller Foundation, whose purpose, as announced in the charter of the Foundation, is "to promote the well-being of mankind throughout the world." The gift seems particularly opportune at this time when strong bodies and keen minds for years to come will be needed to bring order and stability out of the chaos of the last few years.

ANOCIATION

A careful psychological preparation of the patient for the operating room and its events is one of the first principles of the pre-operative technique used by Dr. George W. Crile. "Anociation" is an abbreviated form of "anoci-association" (literally, absence of harmful associations), a term which Dr. Crile has applied to his methods of preventing surgical shock and has developed as a corollary of his "kinetic theory of shock" in various books and monographs, notably *Man an Adaptive Mechanism* (Macmillan, 1916) and *Anoci-Association* (Saunders, 1914). In addition to the use of nitrous-oxid-oxygen as a general anesthetic, and novocain and other drugs as simultaneous local anesthetics, the technique calls for detailed attention to the emotional effects of the patient's environment.

This is, of course, no more than the present practice in some of the best hospitals wherein the first impressions of the receiving ward, the subordination of instruments, the esthetic preparation of food, tactful and cheerful conversation, and considerate and gentle treatment on the part of the nurses, anesthetists, and surgeons, all combine to improve the morale of the patient before the operation. These things have been found to have a direct physical effect in the keeping down of acidosis, which otherwise results in over-activation of the kinetic system, including the brain, the liver, the adrenals, the thyroid, and the muscles. They also exercise a distinct influence upon the metabolism of the healing process. Dr. Crile claims for his methods, as employed in his clinic at Lakeside Hospital, Cleveland, a large reduction of post-operative mortality and morbid sequelae.

The JOURNAL has neither the knowledge nor the authority to suggest that Dr. Crile's technique should be adopted bodily by all surgeons and hospitals. That is the province of specialists. Scientific study of the body from the biological standpoint, of operative conditions, and of possible methods is undoubtedly the responsibility of all who have to do with surgical cases, and some such technique will probably be the universal rule in the future.

But the method has suggestive implications for others than the surgeon: for instance, the public health official, seeking to put before his constituency certain essential principles of sanitation and personal hygiene, can often make use of analogous methods to prevent "noxious associations" on the part of those to whom he addresses his plea. The propaganda against vaccination, against vivisection, against the Schick, Wassermann, and other modern tests, and against all forms of medicine and surgery which oppose or minimize the so-called drugless methods, secure their main support from the tendency of the human mind to be disagreeably affected by associations of pain, suffering, and horror. The anti-vaccinationists, for instance, ring the changes upon "pumping your children full of poisonous and decaying 'germs.'" Instances will occur at once to the mind of the reader of how this readiness to fear and shock has stood in the way of essential and desirable progress in sanitation. It is the business of the public health expert to use psychological methods as subtle in their way as those of his opponents. Many desirable reforms can be promoted by calling up in the mind of the average man, negative associations in connection with the condition which it is desirable to prevent, and positive ones in connection with the remedy.

To create the requisite agreeable associations in the case of vaccination, for instance, we must stress three things: (1) the desirability of freedom from disease; (2) the harmlessness of scientific vaccination; and (3) the preventive efficiency of the vaccine method. The present generation has never known the dread which the disease inspired three centuries ago, when a fourth of the population of England was carried away by a single epidemic, and the pock-marked face was so frequent upon the streets as to be a commonplace. But every one knows the healthy smoothness of a baby's cheek, and every one wishes to retain, if possible, such a complexion for himself and his children. Emphasize, then, the advantages of health and of immunity from contagion. Secondly, bring home that the process of vaccination is nothing to be feared. Its actual effects in producing either local infection or serious illness or death are negligible and traceable entirely to careless administration. The physician who is thus indifferent to his client's welfare would be equally untrustworthy for anything from coryza to a major operation. Modern methods of vaccination occasion practically no discomfort and seldom any sequelae. Finally, the facts of reduction of smallpox mortality, coincident with the introduction and general extension of vaccination are incontrovertible. The supporting data are abundant. There is in the United States at present, as pointed out in the August JOURNAL (page 751) and in a recent review of the situation in twenty states by Force and Leake (*Public Health Reports*, August 19, 1921), an upward tendency to the curve of smallpox case rates. This rise has been paralleled by popular apathy in regard to vaccination and by legislative reaction in its enforcement,—so much so as to indicate that these are the main causative factors in the increase. But comparing conditions over long periods of years, even with this setback and regardless of the type of disease, prevalence today is so slight as to be a matter of common knowledge to every one.

Examples could be multiplied, but sufficient has been said to suggest ways of application of "association" to problems of public health-education.

LETTERS TO THE EDITOR

Ithaca Again

To the Editor, AMERICAN JOURNAL OF PUBLIC HEALTH:

In spite of the evident interest and pride of the leading citizens and the Board of Health of Ithaca in their local milk supply, the facts remain that the milk delivered to the cafeterias for use by the University students came, during the college year 1919-1920, from sources outside of the control of the Ithaca Board of Health, so far as production was concerned, and the bottle caps did not carry the information required by the state public health law with regard to place and date of production and pasteurization. Furthermore, the not infrequent occurrence of turned or slightly soured milk as served at the cafeterias appeared to give valid evidence that bacteriological control of this supply at least was not maintained or enforced. No study was made of the general commercial milk supply of the city. The statements as made in the article with regard to the milk supply used on the University grounds by the students are believed to represent the facts of the case.

HAVEN EMERSON, M.D.



The Scientific Worker a Poor Correspondent

To the Editor:

This letter is written in order to present to scientific workers a defect which I believe merits attention: namely, the tendency to be lax in correspondence. This accusation has been made against professional men in general, but my experience has been most exasperating in the case of the more technical type of worker—notably the laboratory man.

It is easy to see why the scientific worker should tend to become less "businesslike" than the executive. A good business man is one who decides and acts quickly, even if he does not always decide right. A scientific man, on the other hand, is judged primarily by his accuracy, so that undue speed must sometimes be avoided in his daily work.

It is true that the scientific worker does not always have adequate stenographic assistance, but that defense should not be taken too seriously. Some of the busiest and most capable scientific men customarily

answer their letters by marginal notes. This is an actual saving of time over the dictation method, and is infinitely more satisfactory than interminable delay or no reply at all.

The real trouble seems to be a tendency on the part of the scientific man to put off his decisions, whereas he needs to take himself by the collar and resolutely compel himself immediately to dispose of those matters which can be settled at once. He needs to do this in fairness to his correspondents, but more particularly for his own good. Many a capable scientific man has lost larger opportunities because his unwillingness or inability to act promptly has given him the reputation of lacking capacity.

Therefore, let the scientific man hang a big "Do It Now" sign over his desk and follow it.

A SCIENTIFIC MAN WHO LEARNED HIS LESSON
THROUGH HARD KNOCKS.



Acupuncture

Dear Sir:

In view of your very timely editorial on "Vaccination" (A. J. P. H., August, 1921, p. 751), may I point out the advantages of a method of vaccination not mentioned in the editorial—the acupuncture method—the embryonic idea of which was suggested to me by Kinyoun of Washington a number of years ago and which has developed, especially during the war, to an exceedingly simple technique.

May I comment on your editorial "five points" as follows?

Numbers one, two and four are incontrovertible. The acupuncture method, however, lives up to the requirements of number four even better than the techniques suggested.

Number three, urging that one point of inoculation is as good as three or four is indubitable academically. Practically, however, a certain number of persons who are given inoculations at say three points will develop "takes" at two or even one point only. Obviously had only one point been inoculated this might have been one of those which did not take; and revaccination with its practical difficulties would have to be secured. In vaccinating, one must first catch one's hare. Having caught the hare, it is good practice to kill him very dead

indeed while you can, lest he get away again.

The value of number five, calling for surgical care of vaccination "wounds," depends upon the interpretation of the term "surgical care." In the acupuncture method there is *no* traumatic "wound," and the principle for successful development of the pustules is absolute non-interference. Absolutely *no* dressing or other treatment of any kind whatever should be given. The "patient" should not expose the pustules

to mechanical injury (is very unlikely to do so, of course, from instinctive self-preservation) and should not take *prolonged* baths, which may soften the pustule walls and so encourage breaking open of these otherwise firm cavities. May I add that the acupuncture technique is an excellent one for using tuberculin in von Pirquet tests, and in using extracts of various foodstuffs in anaphylaxis skin tests.

H. W. HILL,
Director, Institute of Public Health, London, Ontario.



ASSOCIATION NEWS

LIST OF NEW MEMBERS

Proposed for Election to the A. P. H. A. August 1 to August 31, inclusive.

Names of Sponsors are set in **Bold Face Type**.

Names of New Members are set in Light Face Type.

COLORADO

Agnes Paulsen, Denver, Colo.

Olive Viola Haynes, Community Nurse, Primero.

MASSACHUSETTS

Prof. C. E. Turner, Cambridge.

Alma Taylor, R. N., 11 Hoyle St., Norwood, School Nurse.

James H. McCurdy, M. D., 93 Westford Ave., Springfield, Secretary-Editor, American Physical Education Association.

Miss Helen F. McCaffrey, 14 Mason St., Boston, Supervising Nurse, Boston School Department.

Bernard W. Carey, M. D., Boston.

Mr. Edward Wright, 141 State House, Boston. Assistant Engineer, Massachusetts Department of Public Health.

NEW YORK

B. R. Witt, LL.B., Brooklyn.

Abraham S. Teitelbaum, M. D., 2168 Pitkin Ave., Brooklyn, Bacteriologist.

C. E. Terry, M.D., Darien, Conn.

Mr. Cornelius Francis Collins, Children's Court New York, Justice, Court of Special Sessions.

PENNSYLVANIA

H. M. Freeburn, Harrisburg.

Claude F. Wertz, Engineering Assistant, State Department of Health, Harrisburg.

L. D. Matter, B. S., 1933 N. 7th St., Harrisburg, Sanitary Engineer.

CANADA

Dr. M. A. Nickle, Weyburn, Sask.

A. W. Knox, M. D., Colgate, Saskatchewan.



THE HEALTH INSTITUTE

Preliminary plans for the Health Institute were described in the September JOURNAL. In this issue we are presenting a more definite and detailed schedule of events. While this is still tentative and subject to correction, it may be considered as an indication of the scope of the Institute.

As previously announced, the Health Institute is to be held during the week preceding the Annual Meeting. The dates now selected are the four days, November 8, 9, 10, and 11. They begin on Tuesday and end Friday. The Annual Meeting will be held from November 14th to 18th.

The Health Institute is sponsored by the American Public Health Association, the Health Department of the City of New York, the New York State Health Department, the United States Public Health Service, and the National Health Council, with the added cooperation of over a hundred other associations. Dr. W. A. Evans is chairman of the committee in charge and Dr. D. B. Armstrong of the National Health Council is director of the Institute. Dr. Armstrong has recently been assisted by Mr. James A. Tobey of the Washington office of the National Health Council.

The purpose of the Health Institute is to afford an opportunity for public health workers to see the actual operation of the established methods applicable to various phases of public health activities, as vital statistics, child welfare, control of communicable diseases, (including tuberculosis and venereal diseases), public health nursing, social work, sanitary engineering, mental hygiene, laboratory procedure, and industrial hygiene. This will be accomplished by demonstrations afforded by the facilities of New York City and vicinity, each under the direction of a competent health authority.

The headquarters for the Institute will be in the conference room of the National Health Council, 370 Seventh Avenue, or the Hotel Astor, according to the number enrolling.

The following program has been arranged by the chairman of the subdivisions. A tentative tabular schedule is given herewith, the numbers in it corresponding to the numbers of the subjects in this program below.

Vital Statistics

Prof. R. E. Chaddock, Chairman.

1. Mechanical devices, research, etc. Metropolitan Life Insurance Company, Statistical Department, 1 Madison Avenue. (Dr. Louis I. Dublin, in charge.)
2. Division of New York City into sanitary areas for administrative and research purposes, New York Federation of Churches, and the 1920 Census Committee for New York City, 200 Fifth Avenue. Exhibit of Maps and Charts.
3. Division of Vital Statistics, New York City Health Department, methods of registration and recording births, deaths, etc., 505 Pearl Street.
4. Central exhibit of record forms for all varieties of clinic and hospital work, health centers, nursing associations, industrial plants, etc., 370 Seventh Avenue. (National Health Council Conference Room.)

5. Tuberculosis statistics at the New York Tuberculosis Association, 10 East 39th Street.

Hygiene of Mother and Child

Dr. S. Josephine Baker, Chairman; Dr. Jacob Sobel, Vice-Chairman.

6. Pre-natal clinic and Baby Health Station Service, City Department of Health, Baby Health Station, 206 Madison Street.
7. Meeting of licensed midwives at Borough of Manhattan Office. Demonstration at Bellevue Hospital School of Midwifery, 223 East 16th Street.
8. Cardiac and other special classes, public schools.
9. School Medical Inspection.
 - a. Morning inspection.
 - b. Routine classroom inspection.
 - c. Physical examination.
 - d. Consultation of parents.
- Also Little Mothers' League, Health League and various clinics, as dental, eye, sight conversation, etc. Public School 21, 216 Mott Street.
10. Day Nursery, child caring institutions, and pre-school age clinics.
11. Demonstration of Schick Test.
12. Nutritional classes and clinics.

Public Health Nursing

Miss Elizabeth Gregg, Chairman.

13. Child Welfare Nursing.

Pre-natal work, methods of instruction and supervision, at baby health stations, and in homes.

School nursing, special clinics, open-air classes, care of children at all ages.

Diet kitchen nursing service.

These demonstrations will be given in connection with 6, 8, 9, 10, and 12 above.
14. Preventable Disease Nursing.

Methods of procedure and system of record-keeping in control of infectious diseases at branch Registration Offices.

District visiting with nurses to observe technique in families, especially among foreign-born.
15. Visiting Nurse Service.

Bedside care and instruction, obstetrical and contagious services, of Henry Street Settlement.
16. Social Aspects of Nursing. To be given in connection with 17, 18, and 19 below.

Socio-Health Activities

Mr. Bailey B. Burritt, Chairman; Mr. John C. Gebhart, Vice-Chairman.

17. Community health work of the Association for Improving the Condition of the Poor, Mulberry Community House.

18. East Harlem Health Center, Opening ceremonies and demonstrations of neighborhood health work, 356 East 116th Street.

19. Hospital social service conducted by Bellevue and other large metropolitan hospitals.

20. Tenement House Department, New York City. Methods of handling complaints and violations of the Tenement House Law. Inspection of typical buildings.

Sanitary Engineering

Mr. Kenneth Allen, Chairman.

21. Water Supply:—

21A. Kensico Dam, Valhalla, White Plains, N. Y.

21B. Exhibits at Museum of Natural History, 77th Street and 8th Avenue.

21C. East Jersey Water Company, filtration plant, Little Falls, N. J. and Hackensack Water Company, New Milford, N. J.

21D. Mt. Prospect Laboratory.

22. Sewage:—

22A. Passaic Valley Sewage Plant, Newark, N. J.

22B. Dyckman Street Sewage Screens.

23. Streets:—

City Street Cleaning Department, model street-cleaning area.

24. Garbage:—

Newark, N. J., Garbage Disposal Plant.

Communicable Diseases (Including Venereal Diseases and Tuberculosis)

Dr. L. I. Harris, Chairman; Dr. William H. Snow, Vice-Chairman.

25. Typical clinics—rabies, typhoid, tuberculosis, etc. Various localities, according to number enrolling.

26. Machinery of City Health Department for isolation and quarantine. Stuyvesant Unit, 540 East 13th Street.

27. Tuberculosis and contagious disease hospitals. Willard Parker Hospital, foot of East 16th Street.

28. Regional Conference on Venereal Disease Control. Jersey City Municipal Hospital. Auspices of New Jersey State

Department of Health, Bureau of Venereal Disease Control. Demonstration of preparation and use of arsphenamine, mercury, Wassermann's, etc.

29. Demonstration of Schick Test (See 11 above).

Laboratories

Dr. W. H. Park, Chairman.

30. Visit to Rockefeller Institute, Avenue A and 66th Street.

31. All day trip and visit to Lederle Laboratories, Pearl River, N. Y. (Also open to Food and Drug, Public Health Nursing, Communicable Diseases, and Industrial Hygiene Sections.)

32. City Laboratories, foot East 16th Street. State Laboratory, 338 East 26th Street, and Bellevue Hospital Laboratory, foot East 26th Street.

33. Quarantine Station, Staten Island.

Food and Drugs

Dr. Payne B. Parsons, Chairman.

34. U. S. Bureau of Chemistry Laboratory, 641 Washington Street.

35. Methods of milk pasteurization, City Department of Health.

36. City machinery for inspection and supervision of markets.

Industrial Hygiene

Dr. C. E. Ford, Chairman.

37. Industrial Hygiene work of City Department of Health, including occupational disease clinics.

38. Welfare work of the Metropolitan Life Insurance Co.

39. Medical departments of typical industrial plants of metropolitan district. Daily demonstrations at the clinics of the American Telephone and Telegraph Co., 161 Broadway.

40. Union Health Center. Medical Department and labor union industrial clinic, 131 East 17th Street.

While not as yet definitely scheduled, tentative arrangements are also being made, for study by those interested, of additional activities in or near New York City in other special fields of public health, such as mental hygiene, school hygiene, tuberculosis, etc.

Available in the field of mental hygiene are such activities, for instance, as:

Ward's Island Psychiatric Institute, the Neurological Institute, the Mental Clinic and Psychiatric Social Work at the Vanderbilt Clinic, the Juvenile Delinquency Court Work, the Letchworth Village Model Institute for the Feeble-Minded, etc.

Certain of these activities will probably be scheduled in the final pro-

gram, and special arrangements may be made for their study, depending upon the expression of interests on the part of those planning to attend the Institute.

A nominal fee, amounting to not more than ten dollars (\$10.00) will be charged in connection with the Health Institute.

PROGRAM OF HEALTH INSTITUTE

(Tentative and incomplete arrangement.)

	Tuesday Nov. 8		Wednesday Nov. 9		Thursday Nov. 10		Friday Nov. 11	
	Morn.	Aft.	Morn.	Aft.	Morn.	Aft.	Morn.	Aft.
Vital Statistics	1	*	2	*	3	4	5	*
Mother and Child	9	*	8	11	6	*	7	*
Public Health Nursing	*	*	*	*	*	15	*	*
Socio-Health	*	17	*	18	*	*	19	20
Sanitary Engineering	21A	21B	22A	24	21C	23	22B	21D
Communicable Diseases	*	25	26	*	27	28	*	*
Laboratory	30	33	32	*	*	*	31	31
Food and Drugs	*	35	*	*	34	36	*	*
Industrial Hygiene	39	37	40	*	38	*	*	*

(Numbers correspond with those in accompanying discussion.)

*Indicates that members of this section may attend other sessions, or that other sessions are planned.

CUT HERE

HEALTH INSTITUTE

Dr. Donald B. Armstrong,
370 Seventh Avenue, New York City.

I expect to attend the Health Institute, New York City, November 8-11, 1921.

I am interested in the following demonstrations as outlined in your announcement. (List numbers only of demonstrations as indicated in preceding announcement. If you want other demonstrations, describe briefly on margin.)

Name

Position

Address

.....

EMPLOYMENT BUREAU

HELP WANTED

Help wanted announcements will be carried free in this column until further notice. Copy goes to the printer on the 10th of each month for publication on the 20th. Mail to Boston office as early as possible.

In answering keyed advertisements, please mail replies separately to editorial office in Boston, Mass. In replying give age, professional training, salary requirements, previous positions held and three or more references.

Wanted: Assistant bacteriologist in health Department Laboratory of large Southern city; unusual opportunity; also technician. Address 462, C. O. S., care of this JOURNAL, New York address.

Wanted: Assistant health officer in large Southern city. Applicants should state education, experience, salary desired. Address 464, W. M., care of this JOURNAL, New York address.

Wanted: Milk inspector capable of directing dairy and general food inspections in city of 50,000. Experience necessary. Salary \$2,500 per year. Apply with full particulars concerning training and experience to Dr. R. L. Carlton, Health Officer, Winston-Salem, N. C.

Also: Veterinarian to do meat inspection work with City Health Department. Salary \$2,500 per year. Apply with full particulars to Dr. R. L. Carlton, Health Officer, Winston-Salem, N. C.

Wanted: House physician. Cases, male ambulatory pulmonary tuberculosis. Salary, \$2,000 and expenses. To begin as soon as selected. Address Mount Madison Sanatorium, Gorham, N. H.

Wanted: Competent physician to take charge of tuberculosis sanatorium as medical director at the Tri-County Sanatorium, 18 miles north of Bemidji, Minnesota, at Puposky, on the Red Lake Railway. Must be qualified to practice in Minnesota, capable, honest and efficient. Room and board furnished. Reply at once, stating salary wanted, qualifications, and give references. Address P. A. Walling, M. D., Commissioner, Park Rapids, Minnesota.

Wanted: Assistant bacteriologist. Apply to State Hygiene Laboratory, Charleston, W. Va.

POSITION WANTED

Positions wanted announcements will henceforth be carried in this column. The charge is \$2 per insertion. Copy should be received at this office by the 10th of the month.

Wanted: Physician of mature years and wide experience, excellent executive and good business man, wishes position as superintendent of health in large or middle-sized northern or western city, with well-organized and equipped department. Salary not less than \$3,600. Best professional and business references. Address 176, G. M. R., care of this JOURNAL, New York address.

Wanted: Bacteriologist desires position as director of a city laboratory; woman; B.S. degree; seven years' experience in hospital, state and city laboratories (two as director of city laboratory); trained in general bacteriology, including milk and water; serology, clinical pathology and some blood chemistry. Public health work preferred, but a hospital position considered. Address 178, S. P. M., care of this JOURNAL, New York address.

Wanted: Position wanted by sanitarian; many years' experience in tropical sanitation, including drainage. Can give highest reference. Speak Spanish. Address Box 499, Balboa, Canal Zone.

Wanted: Bacteriologist, holding B. S. from leading Middle Western university and with several years' experience in public-health laboratory work in South, desires change. Capable of directing and handling all phases of public-health laboratory work, clinical microscopic diagnosis and serology. One year in charge of city and county laboratory. At present assistant director in large Southern city. Address 179, M. G. R., care of this JOURNAL, New York address.

Wanted: Experienced food and dairy inspector will be open for engagement October 1. Broad knowledge and training in public-health work. Six years' experience in food, milk, and meat inspection, including laboratory examinations. References from state and city officials. Address 183, J. W., care of this JOURNAL, New York address.

Wanted: Full-time health officer, with B. S. and M. D. degrees from standard universities, and wide and varied experience in

public-health work, is now open for a position with state, county, or city health department. Has held positions with U. S. Public Health Service and served as full-time city and county health officer for a number of years. Would also consider position with industrial corporation. Southern states preferred. Can furnish any kind of business or professional references desired. Address 185, S. C., care of this JOURNAL, New York address.

Wanted: Bacteriologist and chemist (graduate), of London, wishes position. Several years' experience in public health, state and municipal. Has had directing and handling of all phases of public-health laboratory work, including serology. At present at university in New York City. Address 186, B. T., care of this JOURNAL, New York address.

Wanted: By M. D., graduate of class A school, with college training. Public-health, teaching, institutional, or laboratory position in Philadelphia or East. At present director of one of the largest public-health laboratories in the South. Wide executive and

technical experience. Address 187, L. D., care of this JOURNAL, New York address.

Wanted: Dairy, milk, and food inspector, fourteen years' experience, also trained in laboratory analysis and diagnostic work, assistant sanitarian, U. S. P. H. S. (Reserve). At present director, Food Inspection Division of Health Department in Southern city of 50,000. Satisfactory references furnished. Address 188, H. J., care of this JOURNAL, New York address.

Wanted: Health work by trained and experienced sanitarian, with county, state and municipal experience as executive officer and director of health education. Ph. G., M. D., Dr. P. H. Address 189, W. P., care of this JOURNAL, New York address.

Wanted: Max J. Colton, formerly health officer of Cumberland, Maryland, later regional consultant, Division of Venereal Diseases, U. S. P. H. S., now connected with medical relief organization doing medical and sanitary work in Poland, desires an engagement, to take effect on or about January 1, 1922. Address 1422 Mayfield Street, Philadelphia, Pa.

BOOKS AND REPORTS REVIEWED

Nutrition and Clinical Dietetics. *Herbert S. Carter, M.D.; Paul E. Howe, Ph.D., and Howard H. Mason, M.D. Philadelphia: Lea & Febiger, Second Edition, 1921. Pp. 703. Price, \$7.50.*

The material in this large work is conveniently organized in four parts. The first section is devoted to the Physiology of Nutrition. The treatment is compact, clear and up to date. This is followed by a discussion of the principal foods from a chemical point of view. The third part is devoted to Feeding in Infancy and Childhood. The concluding division, amounting to more than half the book, has to do with Feeding in Disease. Thus the scope of the volume is widely inclusive. To approximate its contents elsewhere several books would have to be assembled.

It seems to the reviewer that an ambitious project has been exceedingly well carried out. The coöperation of the three authors has been highly successful; the result is marked by good proportion and good sense.

The number of references to original sources is not large, but the selection shows discrimination. A student seeking a bibliography will still go to Lusk's *Elements of the Science of Nutrition*, but the present full and practical treatise must be of the greatest value to the physician facing concrete problems.

PERCY G. STILES.



Tuberculosis and How to Combat It. *Francis M. Pottenger, M. D., F. A. C. P. St. Louis: C. V. Mosby Co. 1921. Pp. 273. Price, \$2.00.*

Many excellent books have been written for the benefit of the layman or laywoman who has tuberculosis and who wishes to know something about it. Such books must necessarily vary according to the individual ideas of the physician and according to the classes of patients that the physician meets and for whom he intends his book. For this reason Dr. Pottenger's present volume varies widely from that of Dr. Lawrason Brown as well as from one for which the

writer himself is responsible. Dr. Pottenger was once heard to say that by the time his patients had taken the trip across the Continent in order to gain health in the Far West, a serious step and one not taken with some thought, they were ready to do precisely what the physician asked them to do. It might have been added that he who would cross a continent for his health must have at least moderate means. Bearing in mind, therefore, that the book is intended for patients who are distinctly different from the ordinary ones in the East, and indeed for a selected group, (from this point of view) the book is most admirable. It seems to me, however, that this will include only a comparatively small percentage, perhaps one-quarter or one-fifth, for whom a book containing less knowledge and put in more elementary fashion would be more suitable.

I do not believe, for instance, that the average patient with tuberculosis cares about, or is interested in, calories. Diabetics and fat men and women, in my own experience at least, are the chief persons who are willing to delve into the exact number of calories contained in a spoonful of food. The difference between tuberculous infection and tuberculous disease, although of paramount importance, likewise is something which it is doubtful if it would appeal or be of real value to a fairly large proportion of men and women with consumption. In Chapter VI entitled, "How Does Tuberculosis Affect the Patient?" the dividing of patients into six groups is almost a medical classification, the subject itself being a medical one rather than one for the laity. On the other hand, his chapter entitled, "Early Tuberculosis Must Be Taken Seriously," is an excellent one and cannot be given too great emphasis. His chapter entitled, "What to Do When a Diagnosis of

Tuberculosis Is Made" demonstrates that the book is not for the patient with a poor purse or lower grade of intelligence. He is advised to go to a physician or a specialist, but no mention is made of the opportunity to get advice from an out-patient department, a dispensary, the local association or the local or state board of health.

His remarks on "Rest" are excellent, emphasizing as they do that few people know how to rest and that lying in or on a bed does not necessarily constitute rest. His chapter on "Tuberculin" is interesting. Opinions, of course, vary widely as to the value of tuberculin in pulmonary forms of tuberculosis. Personally, I am opposed to it; Dr. Pottenger is one of its most ardent advocates. I think that on the whole this book would be improved by omitting tuberculin treatment or by simply stating that the patient should have no attitude toward this question but should do what his physician advises in regard to this much disputed subject. What he says in Chapter XVI in regard to reducing the amount of coughing is most important, as are the remarks he makes in regard to pain and hemorrhage.

There are many subjects discussed in this book which are not found in others. Fog and rain, much feared by consumptives, are given their proper place. His chapter on "Coöperation" is excellent, as likewise is the chapter on the need of outlining a definite program.

There is an immense amount of useful and valuable information in this book and there are many patients who will be greatly benefited by making a careful study of it. My own criticism of it would be that there are likewise many patients whose intelligence is not of a sufficiently high grade to profit greatly by the volume.—JOHN B. HAWES, 2ND, M.D.



Health Book for Blind.—The blind are to be given an opportunity to become conversant with authoritative rules of health, the American Red Cross having arranged for the early translation of its text book, "Home Hygiene and Care of the Sick," into Braille. The remarkable progress made by blind students in home hygiene and care of the sick classes has warranted reproducing

the text book in a manner that will make it available to the sightless everywhere, whether in school or out. Where the courses have already been offered the blind the students have proved apt, despite their handicap. In practically every country in which the Red Cross is operating the text book has become the recognized health authority in thousands of homes.—(J. A. T.)

PUBLIC HEALTH NOTES

Abstracts by D. GREENE, M. D., M. P. HORWOOD, Ph.D., JAMES A. TOBEY and HOMER N. CALVER.

National Health Departments in Review.

—The ancient Hebrews had a system of medical police, the Greeks appointed public physicians, and the Romans are famous for their public sanitary engineering. Probably the first real Board of Health was that of the Venetian Republic, appointed in 1348 as a result of the ravages of the Black Death. In 1762 a sanitary council was established in every Prussian province, and England passed a number of health laws at the beginning of the nineteenth century. The second great pandemic of cholera from 1840 to 1850 resulted in the organization of Conseils d'Hygiene in France in 1840, and the Public Health Act in England in 1848. The first board of health in this country was that of Louisiana, established at New Orleans in 1855, and followed by those of Massachusetts in 1869, and California in 1870. The yellow fever epidemic in 1878 led Congress to create a National Board of Health, which went out of existence because of lack of appropriations. Its place was taken by the United States Marine Hospital Service in 1883, which became the United States Public Health Service in 1912.

The writers give in detail the health activities of 39 countries, noting also that of the seventy countries listed in the Statesman's Year Book for 1920, eleven have really independent Ministries of Health, as follows: England and Wales, Ireland, Scotland, Canada, France, Czecho-Slovakia, Poland, Kingdom of the Serbs, Croats, and Slovenes, Brazil, Cuba, and Santo Domingo. Of twenty-nine others about which reliable data are available twenty-one have departments of health under the Ministry of the Interior, two under the Ministry of Education, and one each under the Ministries of Labor, Social Affairs, Public Works, and Development. The public health work of the United States is controlled by ten cabinet officers.—Homer N. Calver and James A. Tobey, Washington, D. C., *The Nation's Health*, July, 1921, 391-4.



Infant Mortality Rises in 1920.—Public health workers all over the country are again put under obligation to Dr. Philip Van

Ingen and the American Child Hygiene Association for their early report on infant mortality in American cities.* The report this year is larger and more¹/₂ instructive than ever and represents much work and patience. It covers 519 cities out of a possible total of 657 with populations over 10,000 in the death registration area of the United States.

The infant mortality rate in this group of cities was 90.5 in 1920 as compared with 89.0 in 1919. The increase was slight, but that there should be any at all is disconcerting. Further examination of the figures shows that the increase in the infant mortality rate occurred in cities with populations of more than 50,000 and did not occur in the cities under 50,000. The city of New York, for example, gives 85 infant deaths per 1,000 births in 1920, as compared with 81 in 1919; and in Boston the rate rose from 97 to 101. These are discouraging facts, because in both these cities serious efforts have been made for a number of years to cut the infant mortality rate through extensive prenatal care of mothers. The cities of twenty-five to fifty thousand population appear to have the worst conditions.

The most interesting fact in the array of figures in this report is the marked variation in the infant mortality rate of American cities. In each one of the groups of cities, arranged according to size, there are some whose infant mortality rates are at least twice as high as in the best. It is difficult to understand why in 1920 there should still be nine cities in this list of 519 where the infant mortality rates are in excess of 150. On the other hand, there is very much that is encouraging in the report. There are now 25 cities whose infant death rate is 50 or less. Each one of these places serves as a constant reminder to those others whose infant mortality rates are 100 or more, that they are in a very real sense permitting in-

*This report, entitled "Statistical Report of Infant Mortality for 1920," can be obtained from the American Child Hygiene Association, 1211 Cathedral Street, Baltimore, Md. The Association also publishes "Digest of Programs, National Organizations Carrying On Some Phase of Child Welfare, 1921," a valuable synopsis of the child-welfare activities of 78 national social and health agencies.

fanticide. There is no good excuse whatever for infant mortality rates of 100 or more in the cities of the United States and Canada at the present time.—L. I. Dublin, *Statistical Bulletin*, Met. Life Ins. Co., July, 1921.



Measurement of the Economic Status of Families.—Broad popular distinctions of economic status, such as rich, well-to-do, poor, etc., are always relative to period, community, and several other factors, chief of which is the composition of the family group. For careful scientific research in budgetary studies, economics, or public health, a more refined tool is necessary. Using the scales devised by W. O. Atwater, of the Department of Agriculture, as a basis, which deal with food supply of the individual in terms of calories, the authors endeavored to evolve tables of units of *demand* for food as well as general commodities, corrected for age and sex. They thus secured two units which they named the *fammain* and the *ammain*, defined as follows: 1. *Fammain*, a demand for food of a money value equal to that demanded by the average male in the given class at the age when the expense for his food reaches a maximum. 2. *Ammain*, a gross demand for articles of consumption having a total money value equal to that demanded by the average male in that class at the age when his total requirements for expense of maintenance reach a maximum. By aggregating the "*fammain*s" and "*ammain*s" of a given family, according to the age and sex of the various members, and securing the ratios of these totals to total annual expenditure for food, and to total annual family income, respectively, one is thus enabled to make a valid comparison of two or more families, considered either as a dietary or an economic group. The data presented applied to working-class families in the cotton-mills of South Carolina, and it is of course essential that any such comparisons should be applied only to families that are fairly homogeneous in social status and other environmental factors. Similar studies could, however, be worked out for any broad groups.—Edgar Sydenstricker and Willford I. King, *Quarterly Publications* of the American Statistical Association, September, 1921. (K. M. G.)

How American Cities Dispose of Garbage.—Statistics of 37 American cities show that 10 dispose of their garbage by reduction, 9 feed to hogs, one uses both of these methods, 3 incinerate, 2 deliver to farmers, 2 place the garbage on dumps and one uses a digester system. Eight cities combine the collection of garbage with that of other city wastes. Most of these use the method of sanitary fill.—*American City*, August, 1921. (J. A. T.)



Importation and Sale of Opium, Cocaine, Coca and Their Derivatives in Chile.—Opium, cocaine, coca and their derivatives, according to a regulation approved February 14 by the government of Chile, may be imported only for medical or pharmaceutical purposes. The director of health will determine the size of the importation. Every distributor of these drugs is obliged to keep a sales record, showing the quantity sold to every purchaser, the purchaser's name and the date of sale.—*Pan-American Bulletin*, June, 1921. (J. A. T.)



Eye Strain in Motion Picture Theaters.—Last year a letter was sent by the London County Council to the Illuminating Engineering Society asking for information with regard to "possible causes of eye strain in cinemas and the best means of removing them." A joint committee of representatives of the Council of British Ophthalmologists, of the cinema industry, the Illuminating Engineering Society, the Physiological Society, and the medical officers of the London County Council, was constituted to inquire into the matter. The pronouncement is made that the angle of elevation subtended at the eye of a person in the front row between a horizontal line and one running to the top of the picture should not exceed 35 degrees. This angular measurement was considered the best way to express such composite factors as size of picture, elevation of screen, and distance. The angle stated was found not to cause visual discomfort through the sustained effort of raising the eyes to view a high picture. On similar grounds it was considered that the lateral angle should be limited to 25 degrees. The maximum distance from the screen to the farthest seats should not be more than twelve times the height of the picture—that

is to say, the angle of view should not be less than 5 degrees; but on this point the committee does not make a definite recommendation, as in no case was the limit suggested exceeded. Other questions considered were flicker, imperfections of the film, mechanical defects, nature and brightness of the screen, permissible amount of general light in the hall, and portable outfits for use in schools. Two kinds of flicker were distinguished: a physiologic flicker due to alterations of light and dark, accentuated by strong contrasts in the picture and more apparent at the periphery of the retina, and flicker due to disintegration of the separate pictures, which is most noticeable near the screen. Other conditions which disturb vision are scratches and tears in the film, worn sprocket-holes, instability of projection apparatus, and faulty manipulation; but on these points the committee did not see its way to set up a criterion by which to condemn the exhibition of any particular hall. In the matter of brightness of picture much depends on the quality of the screen. A semipolished aluminum screen was found to give the brightest picture for those directly in front, but this advantage is counteracted by the serious diminution of light when viewed from the side seats. On the whole, the committee were disposed to favor a dead-white screen as the best for common use. As to general illumination of the hall, the committee is satisfied that the present regulations requiring an intensity of not less than one-fortieth of a foot candle is reasonable and does not prejudice the picture on the screen; but they think that it would be an advantage to graduate the lighting so that the back of the hall should be better illuminated than the front, which derives a fair amount of light from the screen. The method of graduated lighting would be a great advantage to people coming in from the bright outdoor light, and would not interfere with a proper view of the picture. Of course, no unshaded source of light should be visible to an observer looking toward the screen.—*Foreign Letter, Jour. A. M. A.*, May 28, 1921, 1510. (D. G.)



British Ministry Denies Support to Self-Disinfection Policy.—The British Ministry of Health, after carefully considering the final report of the Royal Commission on

Venereal Diseases and that of an inter-departmental committee appointed by the Minister of Health, has officially declared that the government cannot give support to self-disinfection as a policy.

In its statement issued under date of May 31, 1921, a copy of which has been received by the American Social Hygiene Association, the Ministry states its decision thus: "The actual situation which confronts the government is that there is not unanimity of opinion on the medical side as to the practicability and likelihood of success of self-disinfection for the civil population, whereas on the moral and social side most weighty objections are advanced against it. It is clear that this question is one which cannot be decided solely by reference to medical opinion: moral and social considerations of very great importance are involved in it. In the circumstances the government has decided that they cannot give official support to self-disinfection as a policy."

This pronouncement, it is claimed, will go far toward ending the controversy on the merits of the immediate treatment or so-called prophylactic packet, which has been carried on in England for a considerable length of time.—*Social Hygiene Bull.*, August, 1921. (D. G.)



Temperament in Nursing.—"The Rôle of Temperament" is the first in a series of articles on "The Element of Personality in Nursing," by Donald A. Laird. Professor Laird admits that no training school can infallibly produce a nurse who is "always cheerful, always consistent, always considerate." He believes, nevertheless, that any intelligent person can learn to control his mental states. The relations between the nurse and the suggestible patient are discussed at length.

Other articles are on "The Work of the Private Duty Nurse," by Minnie S. Hollingsworth, R. N., "Odds and Ends of Useful Information," by O. W. Nolen, and "The Problem of the Hour," by Charles P. Bancroft, M. D.—*Am. Jour. of Nursing*, July, 1921. (M. B. D.)



Broncho-Pulmonary Spirochetosis.—The occurrence of broncho-pulmonary spirochetosis is comparatively rare. This circumstance, together with the peculiar char-

acteristics of the disease, makes it a particularly individual problem. The victims of this disease are apparently suffering from tuberculosis. They have recurring hemoptysis for months. Usually chronic bronchitis, with loss of weight, emaciation and a chronic cough ensue. Hemorrhages sometimes last for weeks and then may stop for weeks. These cases are not tuberculosis, however, for upon examination of the sputum no tubercle bacilli are found, but large numbers of motile spirochetes. Bloedorn and Houghton in a report of three cases found that these organisms are more refractive and active than the *Treponema pallidum*, and that they tended to be of two distinct types. One type was thin, delicate and threadlike, with more regular and numerous indulations; the other type was coarser, with few indulations and heavier staining.

There has been little investigation made upon this disease. Castellani first described it in 1906. Since then there have been reports of cases occurring for the most part in the tropical climates. It is probable that the disease is more common in the United States than is realized, but because of its close symptomatic resemblance to tuberculosis, it is seldom recognized until the sputum is examined and the characteristic organism identified. Cases respond to treatment with arsphenamins very readily. There have been cases which when treated for tuberculosis were considered hopeless, but when treated with arsphenamin, have recovered completely.

In view of the fact that this disease is more prevalent than is realized and that it does respond to treatment, it is important that every case of supposed tuberculosis that does not show tubercle bacilli in the sputum should be carefully examined for spirochetosis and syphilis. Prompt and intensive treatment with the arsphenamins may be expected to produce well-nigh miraculous results.—(A. N. T.)



General Hospitals and T. B. Patients.—The opening of wards in general hospitals for tuberculous patients, as recommended by the American Medical Association at its recent annual meeting in Boston, will, it is believed by the U. S. Public Health Service, be of enormous benefit not only to most of the two million known victims of the disease

in the United States, but also to thousands of others in whom the disease is incipient and easily suppressible, if promptly treated. Tuberculosis in this stage is difficult and often impossible of positive diagnosis, even by an expert; and many persons, even when told by their family doctor that their case is "suspicious" and that they should take precautionary treatment, fear the stigma of an avowed tuberculosis hospital and put off action until recovery has become long and difficult. In a general hospital the diagnosis will not be made public and the family will not be embarrassed, but at the same time all necessary precautions can be taken to avoid danger of infection to others.

The resolution was prepared and recommended by the National Tuberculosis Association in 1916; its approval now by the American Medical Association shows a very marked change in medical sentiment.

In support of the new policy it is argued that in many small cities two hospitals, one general and one tuberculosis, can be run only at a loss, but if combined, would pay operating expenses, especially as the combined hospital would draw many secret tuberculous cases. Many general hospitals could easily enlarge their facilities by fitting up wards, roofs, porches and unused open-air spaces and thus provide greatly needed space for tuberculous patients, both former army men and civilians.

The routine treatment of tuberculosis patients in all general hospitals, instead of as at present in only about one-eighth of those in the country should enable people in modern circumstances to obtain preliminary treatment in their home towns instead of being forced to go without or to go to resorts. Such preliminary treatment would habituate the patient to the regimen essential to his cure and to the protection of others and would enable him to go back to his home and get well under home treatment, as he probably would not have done without such training.



National Cancer Work.—The American Society for the Control of Cancer is making arrangements for a National Cancer Week to be held throughout the United States and Canada from October 30 to November 5, 1921. This is the first attempt on the part of the society to carry out a uniform campaign at one time throughout the country

and it earnestly bespeaks the coöperation of all national, state and local agencies interested in public health at that time.

The campaign will be devoted to three principal lines of education:

1. The giving of lectures by well-known physicians and surgeons who have volunteered for this service and who compose the lecture bureaus of the state and local committees for cancer control recently organized by the society.

2. The distribution of literature at all meetings held during the week.

3. Suitable publicity in the lay press and official health bulletins and medical journals.

It is hoped that all state and local boards of health, state and county medical societies, nursing organizations and others which publish regular journals or bulletins will carry notices of this campaign and will assist in all suitable ways to bring the "week" to the attention of their readers. The fullest coöperation is also desired from all field agents and nurses of such agencies. Many of them are in a position to assist materially in the arrangement for lectures and all interested are urged to get in touch with the chairman of the local committee for the control of cancer operating in their state or local communities, or to communicate with the headquarters of the society at 25 West Forty-fifth street, New York City.



A Nutrition Bibliography.—The Bibliography Committee of the New York Nutrition Committee has prepared a Nutrition Bibliography, which is issued in a 30-page pamphlet by the Health Service of the New York County Chapter of the American Red Cross. The bibliography is divided into five classes: Nutrition, Growth and Standards of Development; Malnutrition; Methods of Organizing Nutrition Work; Health Essentials and Teaching Methods; Health Material for Children's Use. A list of bibliographies, directory of publishers, is given as an appendix. While the material is not entirely complete, this bibliography is most useful as a compilation of references to an important subject in public health.—(J. A. T.)



National Education Association.—The Child Hygiene Department of the National Education Association at the annual meeting of the Association held in Des Moines

in July elected as president Dr. O. B. Nesbit, director of medical inspection in the public schools at Gary, Ind. Dr. William A. Howe of Albany, state medical inspector of schools of New York and president of the American School Hygiene Association, was elected secretary. Good programs and a large attendance are reported from the Des Moines meeting.



Statistical Consultation Service.—One of the interstaff committees recently organized by the National Health Council in the Penn Terminal Building is the Joint Functional Group on Statistics. The primary participants in this group are the three organizations of the National Health Council which employ full-time statisticians. The personnel of the group is at present as follows: Miss Edith M. Furbush, National Committee for Mental Hygiene; Miss Mary A. Clark, American Social Hygiene Association; Miss Jessamine S. Whitney, Secretary, National Tuberculosis Association; Dr. Louis I. Dublin, advisory member; Dr. Donald B. Armstrong (Chairman ex-officio), Common Service Committee and National Health Council.

While this group has been primarily concerned with the common statistical interests of the organizations represented, it wishes to be helpful, in the consideration of statistical problems, not only to the organizations directly represented, but also to other affiliated agencies, which do not employ statisticians, either among the Common Service Committee tenants or in the National Health Council at large.

Practically all organizations undertake statistical activities of one kind or another from time to time. It may be that some health agency, not perhaps sufficiently concerned with statistics to employ a statistician, would nevertheless like to have advisory suggestions of the Statistical Group with reference to a projected piece of statistical work.

It has been suggested that the Statistical Conference Group might know where similar studies had been made, whether such studies were feasible, what original sources of information were available, what would be a suitable form for collecting the information, the cost and time involved, methods as to where or by whom the work might be done, etc.

LEGISLATION—FEDERAL

From bi-weekly reports of the National Health Council, July 22-August 24, 1921.

PLANS OF CONGRESS

Congress recessed on August 25 for four weeks. All pending legislation will continue as such after the recess and if not acted on at the end of the special session will automatically come before the regular session of the Sixty-seventh Congress. These reports will be resumed immediately after the recess.

PROGRESS ON MATTERS PREVIOUSLY CONSIDERED

S. 1039. Sheppard-Towner Bill for Protection of Maternity and Infancy. On July 22, 1921, the Sheppard-Towner Bill passed the Senate by a vote of 63 to 7. The measure was adopted by the upper branch of congress without any important changes. A rather spirited debate concerning the bill took place in the Senate. Three efforts were made to change the bill by amendments. The first, presented by Senator Reed, attempted to reduce an appropriation of \$1,000,000 a year for the use of the states in caring for mothers and infants to \$500,000. It was defeated. The second, introduced by Senator Moses, provided that the United States Public Health Service of the Treasury Department should administer the act instead of the Children's Bureau of the Department of Labor. This amendment was defeated by a vote of 61 to 9. An amendment by Senator King, which would have appropriated an additional \$1,000,000 for the protection of maternity and infancy, was also rejected.

Meanwhile, the House Committee on Interstate and Foreign Commerce has continued to hold hearings and take testimony on the measure in preparation for its appearance before the House. On July 21 Brig. Gen. C. E. Sawyer, the President's physician, appeared and described how the bill would fit into a scheme for a department of welfare. Another witness on the same day was Dr. Charles O'Donovan of Baltimore, who opposed the bill as an invasion of states' rights. Mrs. William Lowell Putnam of Boston appeared in opposition on the following day, as did also representatives of the National Association opposed to Woman Suffrage. Surgeon General H. S. Cumming and Assistant Surgeons General L. L. Lumsden and J. W. Schereschewsky of

the Public Health Service presented arguments in favor of the administration of the bill by the Public Health Service. Miss Alice M. Robertson, member of Congress from Oklahoma, opposed the measure. Others who appeared in opposition were Col. C. R. Keiley of the Virginia Council of Defense; Dr. E. G. Williams, State Health Officer of Virginia, and Mrs. Henry Lockwood, president of the Virginia Federation of Women's Clubs.

On July 23, Representative Towner introduced into the testimony a letter from the Assistant Secretary of the Treasury to the Secretary of Labor, which stated that the Treasury Department had no objections to the administrative features of the bill and should it pass the Public Health Service would render every assistance possible to the Children's Bureau. This letter was written after a conference on July 23 at which were present the Secretary of Labor, the Assistant Secretary of the Treasury (acting for the Secretary), the Chief of the Children's Bureau and the Surgeon General of the Public Health Service.

On the same day Miss Julia C. Lathrop, Chief of the Children's Bureau, was called to speak for the bill, as was also Mrs. Maud W. Park of the Women's Committee on the Sheppard-Towner Bill.

The hearings ended at 5 p. m. on July 23. They were notable for the interest taken by the members of the committee and for the many intelligent questions asked by them. The general reaction toward the bill appears to be favorable. The hearings were too lengthy to reproduce here, other than by mentioning the witnesses. Copies of the hearings can be obtained from the National Health Council or from the congressmen.

H. R. 6611. Sweet Bill Creating a Veterans' Bureau. This measure, which had passed both houses of congress, was sent to conference. (See Statement No. 9, page 3.) An agreement was speedily reached and the Senate adopted the report on August 1, 1921, without a record vote. In the House the adoption was ordered by a vote of 267 to 4 on August 2, 1921. The bill has been outlined in various reports. As it finally passed, it provides for the consolidation of the Bureau of War Risk Insurance, the part of the Public Health Service concerned with hospitalization, medical care and treatment

of ex-service men, and the Federal Board for Vocational Education into a Veterans' Bureau directly under the jurisdiction of the President.

The present law limits the medical care and treatment of incapacitated veterans to those suffering with a service disease or injury of 10 per cent or more. This bill extends medical care and treatment to all service men suffering with disease or injury of service origin or aggravation of less than 10 per cent. Many dental, eye, ear, nose and throat cases, where the disability is less than 10 per cent, may be cared for under the revised law. There is a limitation, however, to the provision of this law, namely, that the application for treatment must be made within one year from the passage of the act. Of course, the time of treatment may extend over the period of one year from the date it is granted.

Compensation and vocational training remain as under the present law. Section 27 of the bill provides that men suffering with disability of service origin may reinstate their lapsed insurance by the payment of all back premiums, providing they are not permanently or totally disabled. Under the present law and the rules and regulations of the Bureau of War Risk Insurance no insurance policy can be reinstated unless it is proved that the insured is in as good physical condition at the time of reinstatement as at the time his policy lapsed.

Under the present law no compensation can be claimed or paid unless death or disability occurred prior to or within one year after discharge or resignation from the service. Section 21 of this measure extends the time for filing claims to within a period of one year after the passage of this amendatory act. This is a very important provision. Technically, under existing law, all tuberculosis and neuro-psychiatric diseases which did not emerge and become active within one year after date of discharge were debarred compensation.

An amendment, proposed by Senator Walsh when the bill was under discussion in the Senate and added in the Senate bill and agreed upon in conference, will further extend the benefits of the present law by relieving applicants for compensation suffering with tubercular and neuro-psychiatric diseases, which developed within two years, from the necessity of proving that said

disease was contracted in the service.

The President signed the Sweet Bill on August 9, 1921, it thus becoming a law. At the same time he sent to the Senate the nomination of Col. C. R. Forbes, Director of the Bureau of War Risk Insurance, to be head of the Veterans' Bureau. This nomination has been confirmed. Major A. D. Dean of New York has been appointed assistant director of the new bureau.

The Senate Committee, headed by Senator Sutherland, which is investigating Soldier Relief and Hospitalization of former service men, has continued its hearings.

On July 25 Surgeon General H. C. Cumming of the Public Health Service gave a history of the attempts to get sufficient money from Congress for hospitals and outlined the work of the service before the war. He stated that 64 hospitals, 42 general, 10 mental and 12 tuberculosis, are now in use. Allegations that dentists had been guilty of graft in treating former service men were made by Dr. William S. Terriberry, Assistant Surgeon General of the U. S. Public Health Service. He testified that the names of 37 dentists had been given the Department of Justice for prosecution.

On July 26 Dr. Cumming continued his testimony. Dr. Thomas W. Salmon also spoke, as did Dr. H. A. Pattison of the National Tuberculosis Association. Assistant Surgeon General C. H. Lavinder of the Public Health Service told of hospitalization conditions. He stated that in 1921 there were 137,713 patients, 970 full-time doctors, 238 attending specialists, 1,525 nurses and 9,448 other employees. The cost per patient per day was \$3.68.

Dr. Haven Emerson, Medical Director of the Bureau of War Risk Insurance, appeared on July 26 and described the work of his bureau.

On July 28 Dr. W. C. White, chairman of the Hospitalization Board appointed by Secretary Mellon of the Treasury Department, explained the plans of his committee for the expenditure of the money appropriated by congress for improving and enlarging hospitals. Dr. White stated that his board had recommended the expenditure of an additional \$16,400,000, which would make a total of \$35,000,000. He also testified that the report of the Dawes Commission submitted to President Harding last spring was drafted by him and his consultants. On July

28 Col. Charles R. Forbes, Director of the Bureau of War Risk Insurance, gave evidence, in which he declared that an entire physical re-examination of war veterans was a necessity and that applications were coming into the bureau at the rate of 1,000 every day. Most of these applications were mental and nervous cases, he said.

H. R. 7294. S. 2116. Willis-Campbell Bill Supplemental to National Prohibition Act. This bill passed the Senate on August 8 by a vote of 39 to 20. An important amendment was added, namely, that search of private property without a search warrant should be prohibited. The medical features remained unchanged. The bill went to conference, having been passed by the House July 6. Considerable difference of opinion developed in conference concerning the amendment. The Senate failed to adopt the conference report as finally made and so the bill did not pass and will go over until after the recess. There was much discussion of the bill up to the last minute, midnight, August 24.

S. 1607. H. R. 5837. Fess-Kenyon Bill for a Department of Public Welfare. Since many requests as to the status of this bill have been received, it may be stated that the bill has not yet been reported from committee. It has been suggested that action is being deferred until the Smoot-Reavis Joint Committee on Reorganization makes its report. A scheme for a similar department is included in this committee's plans.

Dr. L. K. Frankel, director of the Division of Welfare of the Post Office Department, left on August 1 on a six weeks' tour of inspection of the more important post-offices in the country. The National Health Council has favorably voted on a request from Dr. Frankel that the Washington representative of the council, Mr. James A. Tobey, be assigned to assist Dr. Frankel for part time work. Mr. Tobey has, accordingly, done this since the middle of July, in addition to his regular work. Dr. Frankel has also made an arrangement with the American Red Cross whereby that organization will help in furnishing first-aid material and give courses in first aid, and possibly home hygiene to post-office employees. The U. S. Public Health Service is to make periodic inspections of post-offices to ascertain their sanitary conditions.

H. R. 7883. S. 2300. Bill to examine delinquents before District of Columbia Juvenile Court. A favorable report was made on July 28, 1921, by the House Committee on the District of Columbia on the Underhill measure providing for physical and mental examination of all delinquents brought before the Juvenile Court of the District of Columbia. The report makes H. R. 7883 a substitute for H. R. 7212. Both bills are by the same author. The bill provides for the appointment by the judge of the Juvenile Court of a physician who has had special training as a psychiatrist at a salary of \$5,000 a year to examine the mental and physical condition of all children brought for trial for juvenile offenses. A psychiatric case worker, a psychologist and a woman physician, who are also to be appointed by the judge of the Juvenile Court, are included in the bill. The original measure, H. R. 7212, presented to the House by Congressman Underhill, contained provisions for the conduct of these examinations by officers of the U. S. Public Health Service. Following the favorable report the bill has been committed to the committee of the whole House on the State of the Union. The bill was introduced in the Senate by Senator Ball, July 22, and referred to the Committee on the District of Columbia.

NEW LEGISLATION

References to Drugs and Medicines in the Fordney Tariff Bill. That portion of the Fordney Tariff Bill which has passed the House and is now pending in the Senate, relating to coal-tar products, intermediates, chemicals and synthetic drugs, is of more than ordinary interest to physicians and other health workers. It is perhaps the first time that legislation of this character has ever been incorporated in a tariff bill.

Without mentioning the technical names of these synthetic drugs and coal-tar products, it may be stated that the bill places an adequate protective duty on more than two hundred of them. Practically all of these drugs were made exclusively in Germany before the war. The war prevented their importation from Germany, and their manufacture was thereupon developed in the United States.

A few of these highly important medicines, which have been manufactured in large quantities in the United States during

and since the war, and which will be protected by the Fordney Tariff Bill may be mentioned.

For instance, phenacetin, a coal-tar product, was before the war valued at \$2.00 a pound at the custom house, but sold to retail druggists at \$16.00 a pound. Its cost was still more inflated on its sale to the consumer. It is now made by American manufacturers and sold at \$1.65 a pound.

Antipyrin sold at \$20.00 a pound before the war. The same product, of American manufacture, now sells at \$4.50 a pound.

Aspirin on the pre-war basis sold at \$10.00 a pound. American aspirin now sells for \$1.00 a pound.

Salvarsan cost \$3.50 a dose before the war. The same product can now be obtained, manufactured in America, for 36 cents a dose.

(The figures given above are taken from a speech by Representative Caleb R. Layton, who is a physician. He states that he obtained them from the Rockefeller Foundation.)

The Fordney Tariff Bill places a protective tariff duty on at least two hundred drugs of similar character which have their basic foundation in coal-tar products, highly developed through chemical processes.

H. Res. 165. Pellagra in the South. Introduced by Mr. Byrnes of South Carolina on July 28, 1921. Referred to the Committee on Interstate and Foreign Commerce. On July 25 President Harding wrote letters to Surgeon General Cumming of the Public Health Service and to Dr. Livingston Farrand of the American Red Cross concerning pellagra in the South. He stated that reports indicated a distressing condition among the rural population in the South and pointed to a grave epidemic of pellagra. He requested that the Public Health Service and the Red Cross coöperate in an immediate survey of conditions.

The publication of these letters has brought forth indignant denials from members of Congress from most of the Southern states, who quote their state health officers to the effect that conditions are not as serious as believed. Meanwhile a conference was held between the Public Health Service and the Red Cross and plans deferred pending a meeting of the Public Health Service and state health officials. An executive

conference between the Public Health Service and the health officers in thirteen Southern states was held in Washington on August 4.

H. R. 8086. Prohibiting Transportation in Interstate Commerce of "Filled Milk." Introduced by Mr. Voight, August 4, 1921. Referred to Committee on Agriculture. Favorably reported August 19, 1921. This bill makes it unlawful for any person to manufacture in any territory of the District of Columbia, or to ship or deliver for shipment in interstate or foreign commerce any filled milk. "Filled milk" is defined as any milk, cream or skimmed milk, whether or not condensed, evaporated, powdered, dried or desiccated, to which has been added, or which has been blended or compounded with, any fat or oil other than milk fat, so that the resulting product is in imitation or semblance of milk, cream or skimmed milk, whether or not condensed, evaporated, concentrated, powerful, dried or desiccated.

This bill was drafted as a result of hearings on H. R. 6215, held on June 13, July 6, 7, 19 and 20, 1921. Among the witnesses were Dr. E. V. McCollum of Johns Hopkins, who testified that the vitamins, which are absolutely necessary to promote growth in the human body, are found most abundantly in butter fat, and that milk is the chief article of food relied upon for the vitamins. He said that milk is the only food for which there is no effective substitute. Other witnesses included officials of the Department of Agriculture, Dairy-men's League, dairy and agricultural associations, commercial firms dealing in milk, and representatives of the commercial firms manufacturing the so-called filled milk.

The Committee on Agriculture reported the bill favorably on August 19, 1920. A minority report was filed by Mr. Aswell, who contended that there is nothing deleterious in filled milk, that it is cheaper than milk, and if properly labelled is not unlawful.

H. R. 8378. Prohibiting Manufacture and Sale of Adulterated or Deleterious Butter. Introduced by Mr. Browne, August 23, 1921. Referred to Committee on Agriculture. This measure requires oleomargarine and similar butter substitutes to be labelled as such.

S. J. Res. 104. Army Medical Supplies for Russia. Introduced by Mr. King, August

19, 1921. Referred to Committee on Appropriations. This resolution authorized the President to take any surplus drugs, medicines and medical supplies, of value \$5,000,000, from the medical stores of the War Department, for the relief of the sick and suffering people in Russia.

H. R. 8245. Tax Revision Bill levies Tax on Proprietary Medicines. Introduced by Mr. Fordney and passed by the House of Representatives, August 20, 1921. A section of the Tax Revision bill levies a tax of 5 per cent on all medicinal preparations claiming to have a private formula, which are sold by the manufacturers. Vaccines and bacterines are excluded from this tax.

The following bills seem to have only an indirect bearing on public health and so are merely cited:

H. R. 1475. Biological Station for State of Washington. House agreed to a Senate amendment, August 12.

H. R. 8365. Permitting Use in Post Office at Cincinnati, O., of Special Cancelling Stamps Bearing Words, "Public Health Exposition, Cincinnati, O., October 15-22, 1921." Favorably reported, August 23, 1921.

S. 2365. Authorizing Bureau of the Census to Conduct Surveys of Municipal Activities.

REVIEW OF FEDERAL HEALTH LEGISLATION, APRIL 11-AUGUST 24, 1921

Although the Senate was in session from March 4 to 15, 1921, the actual work of the Sixty-seventh Congress began on April 11, 1921, when the President called a special session of Congress. Both branches of Congress have been continuously in session since April 11 until August 24, when a recess was taken, which is to last until September 21.

During the period from April 11 to August 24, 1921, there have been introduced in the Senate 2,457 bills and in the House 8,405 bills. Besides, there have been several hundred resolutions, joint resolutions and concurrent resolutions in both branches. Of this vast number of bills and resolutions, the National Health Council has listed 121 as dealing with public health, or as being so closely allied to it as to deserve mention. Forty-one of the bills have been considered as only indirectly bearing on public health and so have been merely cited. The remaining 80 have been abstracted and their

progress carefully followed. Twelve legislative reports have been issued as follows:

<i>Number</i>	<i>Date (1921)</i>	<i>Period Covered</i>
No. 1 (a)	March 4	66th Congress
No. 2 (b)	April 25	April 11-23
No. 3 (b)	May 6	Fess-Kenyon Bill
No. 4	May 10	April 25-May 9
No. 4A (c)	May 16	Special Bills
No. 5	May 25	May 10-24
No. 6	June 8	May 25-June 7
No. 7	June 23	June 8-22
No. 8	July 8	June 23-July 7
No. 9	July 22	July 8-21
No. 10	Aug. 5	July 22-Aug. 4
No. 11 (d)	Aug. 25	Aug. 5-Aug. 24

(a) Only a few were issued. Supply now exhausted. Back numbers of all the others are available.

(b) The first 50 copies of Statements Nos. 2 and 3 were not so numbered.

(c) Prepared at special request of National Tuberculosis Association and distributed only to Council members.

(d) Review and Index number.

Besides the twelve reports listed above, much special information on individual bills and legislative matters has been sent to members of the Council and a few others at their request. All reports are entirely non-partisan and impersonal. The legislative statements were originally intended only for Council members, but the demand from others has been so great that arrangements have been made to sell copies to *non-members* at cost price, twenty cents apiece. At present a total of nearly 300 names are on the mailing list. It is hoped that by next December when the regular session of Congress opens, the circulation will be large enough to make it worth while to print the reports instead of mimeographing them.

While space does not permit of a complete review of the bills which have previously been abstracted in the legislative statements, a brief resumé of some of the more important follows. A complete history of each bill is given in the Index, at the end of this section.

Perhaps the measures of greatest general interest to health workers are the Sheppard-Towner Bill for the protection of maternity and infancy, the Fess-Kenyon Bill for a department of welfare, the Sweet Bill creating a Veteran's Bureau, the Willis-Campbell Anti-beer Bill, and the work of the Smoot-

Reavis Joint Reorganization Committee. The Sheppard-Towner Bill passed the Senate on July 22. The House has not yet acted on it but the Committee on Interstate and Foreign Commerce, to which it was referred, held hearings from July 12 to 23. Hearings on the Fess-Kenyon Bill were held by joint committees of both branches of Congress last May. No action has been taken to date. It has been stated that action has been deferred until the Joint Congressional Committee on Reorganization of the Federal Departments shall have completed its report. The plans of this committee call for a department of public welfare. The bill for a Veteran's Bureau became a law on August 9 when it was signed by the President. The so-called Anti-beer bill has passed both houses and been in conference. The House adopted the conference report, but, after a long and tempestuous discussion, the Senate refused to do so, at the last minute. The bill accordingly will have to await action until after the recess.

Other important measures included the General Deficiency Bill, which contained an appropriation for the Interdepartmental Social Hygiene Board, so that it could be continued for another year. A bill for the control of venereal diseases in the District of Columbia is before the House but has not yet been acted upon. Other important bills upon which no action has as yet been taken comprise those for a department of education (including health activities); for fostering physical education; controlling the practice of medicine, chiropractic, osteopathy, optometry, and undertaking in the District of Columbia and elsewhere; and commissions for sanitary engineers in the Public Health Service. Bills relating to the District of Columbia are cited in our reports because they often also relate to the territories. Since Congress legislates for the District, health laws which are adopted may possibly serve as examples for other parts of the country. Besides, government institutions of national scope are sometimes affected by such local legislation. The bill prohibiting vivisection, for instance, would interfere with important experimental work of the Hygienic Laboratory, which is of national interest. Incidentally, no action has been taken on this bill, which is before the Senate.

LEGISLATION—STATE

California.—The Board of Health of San Francisco, at a meeting held on July 21, 1921, passed the following resolution:

"Resolved, that the Board of Health place itself on record as being opposed to the issuance of licenses to anyone peddling medicines of any sort on the public streets, as such practice is a menace to public health; and, further, that the Health Officers be directed to refuse to issue permits for the vending of all medical nostrums and products on the public streets."



New York.—By recent legislative amendments to the Public Health Law, the Division of Sanitary Engineering of the New York State Department of Health was changed to a Division of Sanitation and the work of passing upon plans for sewerage and sewage disposal transferred to the State Engineer. As the result of this change C. A. Holmquist, principal assistant engineer of the Division of Sanitary Engineering, was made director of the new Division of Sanitation. The following former assistant engineers of the Department were appointed to serve in the new division: Earl Devendorf, William Young, Alfred Mullikin and Albert I. Howd.

The new law provides that plans for sewerage and sewage disposal formerly passed upon by the State Department of Health, must now be submitted to and receive the approval of the State Engineer before any permit issued by the State Commissioner of Health for the discharge of sewage or industrial wastes into the waters of this state becomes effective. Under this provision of the law, application for the issuance of a permit should be made to the State Commissioner of Health when plans for sewerage or sewage disposal are submitted to the State Engineer. In general, no permit will be issued by the State Commissioner of Health unless the plans are first approved by the State Engineer.

Except as above indicated, the activities of the Division of Sanitation are substantially the same as before the change and include making investigations and reports on existing water supplies and sewerage and sewage disposal systems; major nuisances; cases of stream pollution; sanitary condi-

tions of camps, fair grounds and other public gathering places; typhoid fever and other water-borne epidemics; sanitary conditions of construction, equipment and operation of milk pasteurization plants; special investigations ordered by the Governor; preparing of permits for the discharge of sewage and industrial wastes; passing on plans for mosquito extermination work and coöperation with the Surgeon General of the U. S. Public Health Service in certifying the quality of water supplies used by common carriers in interstate traffic.



Wisconsin.—Providing for furnishing quarantine signs and placards to local health officers at cost.

Making pneumonia and sleeping sickness reportable diseases.

Extending the public comfort station act to give to governmental units the option to provide comfort station and rest-room facilities in camp sites and other places of public assemblage.

Requiring all public health nurses and public health instructors to register with and be certified for employment by the State Board of Health.

Prohibiting the business of slaughtering on the banks of any stream or in any place where a slaughter-house is not provided.

Legalizing publications and advertisements by the state, city, village or town relating to the prevention and treatment of venereal diseases.

Permitting the health officer, attending physician, clergyman or nurse to enter and leave quarantined premises.

Outlining procedure for legally placarding infected homes.

Amending the barbers' and embalmers' licensing laws.



Wyoming.—The State Legislature has ratified venereal disease control, has made ophthalmia prevention obligatory and has established a full-time State Health Officer. The matter of the location for the State Tuberculosis Sanatorium up for popular vote at the next general election.

STATE HEALTH NOTES— GENERAL

Massachusetts.—The Boston Tuberculosis Association is to hold an institute at the Massachusetts General Hospital, Boston, Mass., on October 26-27, 1921, the purpose of which is to afford general practitioners an opportunity to become more familiar with the different phases of tuberculosis. Dr. James Alexander Miller will speak on "Tuberculosis in the Community," Dr. S. Burt Wolbach, of the Harvard Medical School, on the "Pathology of Tuberculosis," and Dr. Richard C. Cabot, on the "Clinical Signs of Tuberculosis." The value of the sanatorium will be discussed by Dr. Vincent Y. Bowditch and Dr. Edward O. Otis will outline the diseases that are likely to be confused with tuberculosis. "Early Diagnosis" will be the topic of Dr. Lawrason Brown, and Dr. W. C. Woodward, Health Commissioner of Boston, and Dr. Eugene R. Kelley, State Commissioner of Public Health of Massachusetts, will discuss city and state relationships to the control of the disease. At the final session of October 27, Dr. Frederick T. Lord will outline the laboratory aids in diagnosis and Dr. John B. Hawes, 2d, and Dr. George Holmes will present a joint paper on the "Correlation of Clinical Findings and X-ray in Cases of Tuberculosis."



Michigan.—Increased laboratory service for physicians throughout Michigan, thus aiding in the control of disease, will be made possible October 1, when the Bureau of Laboratories of the State Department of Health moves into its quarters on the top floor of the new state office building.

With 149,542 specimens examined during the fiscal year ending July 1, the Bureau of Laboratories averaged 34 specimens to every physician in the state, though the practice of many doctors is of such a nature that it does not require laboratory diagnosis. Last year 84,648 tests were made, an average of 19 to every physician, compared to a total of 38,706 for the preceding year and an average of 9 to each physician.

Throat swab examinations showed the largest increase during 1920-1921, diagnoses for diphtheria numbering 57,565, compared to 23,056 a year ago. Every phase of laboratory procedure, according to the annual

report, reveals like increases with the exception of gonococci smears, which decreased after hospitalization at state expense was discontinued. The Upper Peninsula laboratory, located at Hancock, ran 1,000 specimens a year ago, while this year it completed 8,054.

"Michigan's new laboratories will not be surpassed in equipment and scientific conveniences by any state laboratories in the country," declares Dr. R. M. Olin, commissioner of health. "Besides being fitted to give physicians more adequate service it will now be possible to carry on scientific research which will eventually save thousands of dollars and lives for the people of the state."



New Jersey.—Not only is a great work being done in New Jersey during Child Welfare Week and all other weeks of the year, but a remarkably helpful compilation of notes on the literature, lectures, plays, films, panels, charts, and posters relating to child welfare is printed in the March-April (1921) bulletin of the New Jersey Council of Child Welfare. This feature alone makes the New Jersey publication of national interest.



New York.—A practical example of the health center movement was opened in East Harlem, New York City, early in August. It is located on East 116th St., the geographical center of the district, and occupies three buildings formerly used by the Sydenham Hospital. There are 21 participating agencies, including not only health associations but also general community and family welfare bodies. The agencies housed in the building comprise: the New York City Department of Health's two local bureaus of Child Hygiene and Communicable Diseases; district headquarters of the Association for the Aid of Crippled Children; Association for the Prevention and Relief of Heart Disease; New York Diet Kitchen Association; New York Tuberculosis Association; Occupational Therapy Society of New York; American Social Hygiene Association; Health Service of the New York County Chapter of the American Red Cross; Babies' Dairy; Henry Street Settlement; Maternity Center Association; the State Charities Aid Association; Association for Improving the Condition of the Poor;

Charity Organization Society; Catholic Charities; United Hebrew Charities; and Dispensary Development Committee. Other organizations which coöperate with the Health Center, but are not actually housed in it, include Haarlem House, Union Settlement, Harlem Council of Women, St. Timothy Community Center and Settlement. Dr. Royal S. Copeland is honorary chairman and Kenneth Widdemer, executive secretary.

A system of "health bookkeeping" has been adopted by the new health center to make sure that it is adequately covering the needs of the district. Through constant surveys of this area of 100,000 people, the center aims to discover any gaps in its health and welfare program and to introduce new agencies that will fill the needs.

A number of important health moves have already been brought about through the agency of the center. With the coöperation of the City Department of Health and the Red Cross the Schick test has been given to more than 15,000 school children. Six hundred children of pre-school age have also been prepared for school in the fall. Physicians from the City Department of Health have examined them physically, while psychologists from Teachers' College have graded them mentally. A Red Cross nurse has attended to the removal of physical defects.



North Carolina.—Through the joint action of committees representing the Travelers Protective Association, the United Commercial Travelers, and the Hotel Association, in conference with the State Board of Health, considerable revision of the hotel inspection law enacted in 1917 was made, and the recent legislature enacted the proposed legislation. Under its terms the ratings for hotels and restaurants have been placed on a stricter basis. It is now a misdemeanor for any hotel or restaurant coming within the provisions of the law to continue operation provided a score of less than seventy points is made. In administering the law, H. E. Miller, chief of the bureau of engineering and inspection, having direct responsibility for the enforcement of this law, states that in all cases where a score of less than seventy points is made on first inspection an opportunity will be

given for the owners or proprietors to make the necessary changes for the sanitary operation of their places and a re-inspection made. Where the required improvements are not promptly made to comply with the law the places will be closed.

Inspectors of the State Health Department are now engaged in investigating such places in practically all parts of the state. It is expected that within the months of August and September a survey of the entire state may be completed with the force now at work. As fast as places are inspected and scored, the ratings are made public, classified under the three heads of restaurants, hotels, and hotels with rooms only, with the result that the pressure of a healthy public opinion and a mild economic boycott is enlisted against offending hotel and restaurant keepers.



Ohio.—Mansfield and Richland County, Ohio, have been selected by the National Child Health Council as the scene for a unique demonstration of what American communities can do for the most healthful development of their children. The selection of Mansfield and Richland County was announced today after a strong competition among eighty communities, which for several months past have striven to obtain this distinction and advantage. It was felt that conditions in Mansfield and Richland County most nearly complied with the qualifications laid down by the Council for the purpose of securing a typical American community.

This demonstration will cover a period of five years and will deal with children of all ages. It will be directed by Dr. Walter H. Brown, formerly health officer of Bridgeport, Connecticut, who will relinquish his present work with the Commission for the Prevention of Tuberculosis in France the first of September to sail for home to assume his new duties.

The direct objective of the work will be a practical demonstration of what a typical American community can do to increase the health and strength of the next generation. County and state officers, business men, physicians and citizens generally have promised the heartiest coöperation in carrying out this demonstration.

Member organizations of the National Child Health Council are the American

Child Hygiene Association, American Red Cross, Child Health Organization of America, National Child Labor Committee, National Organization for Public Health Nursing, and the National Tuberculosis Association. The standing of these organizations insures keen interest on the part of health and social workers throughout the country.



Wisconsin.—The Wisconsin State Board of Health has appointed Dr. Louis Dorpat, Rhinelander, Wis., and Dr. I. F. Thompson, Madison, as directors of the bureau of communicable disease, recently created. Both have been on the Board's staff for several years. The appointment of Dr. V. A. Gudex as deputy state health officer for the north-western district, with headquarters at Eau Claire, Wis., was made permanent. Miss Ada Eldridge, formerly of Fond du Lac, Wis., and recently in nurses' educational work in New York, was appointed director of nursing education under the new law governing the work of registered nurses. A state committee on nursing education was chosen to consist of Dr. Oscar Lotz, Milwaukee; Miss Agnes Reid, Madison; Miss Amalia Olson, Eau Claire; Miss Shirley Titus, Milwaukee; Dr. Joseph Lettenberger, Milwaukee; Mrs. Adelaide Northam, Wauwatosa; H. K. Thurston, Madison; and Mrs. Mary P. Morgan and Dr. C. A. Harper, representing the State Board of Health.

Dr. F. F. Bowman, deputy state health officer for the first district, conducted county health conferences in August at Richland Center and Viroqua, Wis., which were largely attended and gave a pronounced stimulus to organized health work in the typically rural counties of Richland and Vernon.

The Wisconsin Methodist Hospital, recently established in Madison by the Methodist Episcopal churches of the West Wisconsin Conference, was formally dedicated on August 19, with an address by Bishop Charles P. Mitchell of St. Paul, Minn. This is the first unit of a prospective hospital of 600 beds. Work on the superstructure of the Wisconsin General Hospital, established in connection with the medical school of the University of Wisconsin, will start this fall.

INDUSTRIAL HYGIENE AND OCCUPATIONAL DISEASE

Abstracted by DRS. E. R. HAYHURST and E. B. STARR.

Chief Causes of the Accumulation of Gas in a Mine.—(1) An insufficient volume of air, due to an imperfect fan. (2) Leakage of air before it reaches the working face due to poorly constructed stoppings. (3) Shortened circulation of air currents due to neglected doors, the breaking of a brattice, or the driving of openings too far in advance of the air. (4) Electrically driven fans failing to function.—Joseph J. Walsh, Mine Inspector, Wilkes-Barre, Pa., *Proceedings, Ninth Annual Safety Congress*, pp. 833-840, 1920.

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Health Hazards in the Rubber Industry.—The author discusses the problems of a safety engineer, the general causes of occupational diseases, and the modes by which industrial poisons enter the human body. In Massachusetts during 1917 there were 73,920 days lost by the employees of industry on account of occupational diseases. The occupational diseases peculiar to the different processes in the rubber industry are next taken up in regular order with emphasis upon lead poisoning, antimony poisoning, anilin and benzol poisoning, and risk due to the use of the common accelerator (urotropin). The writer suggests the formation of a Committee on Health Hazards in the Rubber Section of the National Safety Council.—Charles F. Horan, Hood Rubber Company, Watertown, Mass., *Proceedings, Ninth Annual Safety Congress*, pp. 1118-1128, 1920.

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Devices for Detecting Carbon Monoxide Gas and for Protection Against It.—A mechanical CO detector and a simple type of CO gas mask were perfected by members (Frazer, Lamb, Hoover and others) of the Chemical Warfare Service which are adaptable to industrial use. The detector comprises a small metal barrel with a rubber bulb on one end and a means for quickly inserting a glass tube filled with a special chemical in a space on top of the barrel. The chemical used changes color from a

light to a dark green when air contaminated by CO is forced through the tube by the rubber bulb, the amount of color changes depending upon the percentage of CO in the air so that an accompanying calibrated color scale enables one to estimate, in a few seconds, amounts varying from 0.05 to 1.0% CO. The instrument is entirely mechanical and any one can operate it. It is far more sensitive than the canary bird and can be carried through gaseous zones. It has been thoroughly tried out around blast furnaces, steel mills and coal mines with most satisfactory results. The instrument readily shows the presence of CO in cigar, pipe or cigarette smoke (and also the effects of "inhaling") while smoking in which case the CO seems to be absorbed into the system, for it can barely be detected in the exhaled breath when the smoke remnant is blown through the detector.—(E. R. H.)

The protective gas mask weighing 3 to 4 pounds has a canister containing a combination of metallic oxides which catalytically convert CO into CO₂ at ordinary temperatures. While it cannot be used where there is a deficit of O (as occasionally occurs in mines), being catalytic in action, it is not subject to exhaustion by use and is invaluable about furnaces, mills, mine fires, etc. It is regarded as one of the great chemical achievements of the war.—Guy H. Burrell, Mine Safety Appliance Company, Pittsburgh, Pa., *Proceedings, Ninth Annual Safety Congress*, pp. 751-753, 1920.

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Gas and Fume Removal in the Chemical Industry.—Those who have to do with the hazard of gas fumes in chemical industries should read this paper in full. Stress is laid upon the question of exhaust ventilation and types of fans used, and the use of respirators.—Dr. Martin Szamatolski, Consulting Chemist, New Jersey Dept. of Labor, *Proceedings, Ninth Annual Safety Congress*, pp. 526-536, 1920.

Industrial Cataract.—The May issue of the British *Journal of Ophthalmology* contains important papers on the causation of certain forms of cataract. Emphasis is laid on the heat factor as of primary importance in such trades as glass making, and work requiring the gazing into fire or molten or heated metals. The evidence appears to be irrefutable that continuous exposure to excessive heat over a long period is a sufficient cause for cataract. Prevention is not easy although triplex goggles would keep back the heat rays, but some means of controlling the collection of moisture and dust on the glass must be devised.—*Lancet (London)* Editorial, June 25, 1921, p. 1372.



Silicosis as the Prime Factor in Industrial Tuberculosis.—From the work of Drs. Cramer and Gye on the relation of silica in earth contents to the development of tetanus germs in the tissues, a similar influence of siliceous material on the growth of other organisms, principally the tubercle bacillus, has been ascertained. When the tubercle bacillus is injected into the tissues of the mouse, which is inherently quite immune, a spreading infection by the germ takes place. This seems to throw new light on the problem of industrial tuberculosis which is a scourge in so many indispensable trades in which sandy materials are used.—H. H. Dale, *Lancet (London)*, July 9, 1921, p. 112.



Treatment of Acid and Alkali Burns.—In first degree burns, mopping of burnt area with dry gauze followed by cleansing ointment such as boric acid ointment or one made of bicarbonate of soda and petrolatum, or oxide of zinc, will suffice. In second degree burns the wound should be cleansed of all loose rolled-up epidermis, mopped with a boric acid solution, and ointment applied loosely on gauze. Small blisters are let alone but large blisters where there is tension are sterilized with alcoholic solution of iodine and opened aseptically. Sterilized ointment must be used in this case. Dressings are renewed only as often as discharges demand. The third degree burns are cleansed of all loose tissue and treated as those of the second degree. After three or four days the ointment dressing is replaced by a wet gauge dressing of normal salt solution which must be kept wet. Careful removal of slough portions must be seen to.

Shock is combated with morphine as well as stimulating methods. Acid burns of the eyes are douched with a watery solution of bicarbonate of soda and alkali burns with 1 or 2% of acetic acid. Boric acid ointment is put under the eyelid and the case sent to an eye specialist.—A. K. Smith, du Pont de Nemours & Co., Wilmington, Del., *Proceedings, Ninth Annual Safety Congress*, pp. 555-562, 1920.



Physical Examination of Employees.—Those interested in a very comprehensive and detailed paper upon this subject should read the article by Dr. A. W. Colcord, Medical Director, Carnegie Steel Company, Clairton, Pa., in the Proceedings of the National Safety Council (Ninth Annual Safety Congress), 1920, pp. 134-146. The Proceedings are obtainable from the National Safety Council, 168 N. Michigan Avenue, Chicago. What appears of equal merit along similar lines are papers by Dr. Otto P. Geier, Cincinnati Milling Machine Company, Cincinnati, Ohio, on the "Future of Industrial Medicine in a Labor Policy" (pp. 107-113), and "Fundamental Requirements for Successful Medical Work in Industry," by Dr. W. A. Sawyer, Medical Director, Eastman Kodak Company, Rochester, N. Y., (pp. 146-152). These papers are accompanied by the report of discussions.



Shop Standards and Fatigue.—The author quotes, among others, Lee's definition for fatigue as "a diminished capacity for work which is the result of previous work." He emphasizes the accumulation of waste products, the result of work, as the chief factor. The symptoms of fatigue are quoted briefly. There is a rather complete statement of the causes of fatigue. In addition to the usual laboratory tests for fatigue, which are briefly described, the author takes up the factory tests such as output, spoiled work, accidents, cinematograph records, mental and physical examinations, muscle strength tests, and rhythm. Industrial causes of fatigue, both direct and indirect, and the fundamentals of a plant program to reduce same, are delineated. Under the latter headings there should be (1) a physical examination, (2) an examination of the job, and (3) an examination of the plant.—Bernard Newman, *Proceedings, Ninth Annual Safety Congress*, pp. 405-417, 1920.

Ohio Compensates Occupational Diseases.

—The last General Assembly of Ohio passed an Act compensating 15 occupational diseases occurring in any industrial process (specified for each disease), as follows: (1) Anthrax, (2) Glanders, (3) Lead poisoning, (4) Mercury poisoning, (5) Phosphorus poisoning, (6) Arsenic poisoning, (7) Benzol or nitro- and amido-derivatives thereof (anilin and others), (8) Gasoline and volatile petroleum products, (9) Carbon bisulphide, (10) Wood alcohol, (11) "Infection or inflammation of the skin on contact surfaces due to oils, cutting compounds or lubricants, dust, liquids, fumes, gases or vapors," (12) Cancer of the skin, (13) Compressed air illness, (14) Carbon dioxide poisoning, (15) Brass or zinc poisoning. The Law provides that the Industrial Commission of Ohio shall investigate and ascertain the hazards of the diseases specified, shall classify them and fix rates of compensation and that after July 1, 1924, based upon the total pay roll in each of such classes, an adequate fund for the payment of such compensation shall be established. "The commission shall collect and collate information with respect to such diseases, and shall obtain statistical, actuarial and such other information as may be necessary to effect the purpose of this section, including the study of the experience of other states and countries having similar laws compensating the victims of occupational diseases. The commission shall employ and detail to such work such physicians, examiners, clerks and assistants as shall be necessary."

In order to draw compensation under this Act, employees must have been resident in the State for 90 days and must have been employed by an employer coming under the Ohio Workmen's Compensation Law. The Act provides that in controversial cases a medical advisor appointed by the Commission must examine the claimant for the purpose of determining the existence of such disease, and the approximate time, place and cause of its inception; or, in case of death, no award shall be paid until a finding is had by such a medical advisory, who shall have had opportunity to examine the body of the deceased person. From time to time the Commission may publish general information, as the result of the working of the Act, for distribution to employers and em-

ployees. Every physician is required to report occupational diseases to the Industrial Commission. However, the regular occupational disease reporting law which was not repealed also requires that all physicians report occupational diseases to the State Dept. of Health. It is probable that a combined blank will be used to save duplication. The Industrial Commission has recently established a fund for meeting the compensation costs, equal to 2.5 mills on all pay-rolls. It is estimated that this will yield about \$250,000 the first year. It is commonly believed that this sum will be more than adequate unless a very liberal construction is put upon the meaning of the law as drawn and passed.—(E. R. H.)



Physiologically Harmful Gases.—The following table is compiled from Henderson & Paul's paper on "Oxygen Mine Rescue Apparatus and Physiological Effects on Users," pp. 78-79.

- (a) Non-irritating to lung, but when absorbed into blood become protoplasmic poisons.
 - (1) Arsenurated hydrogen.
 - (2) Hydrocyanic acids.
- (b) Gases irritating to bronchial tubes thereby causing injury or death.
 - (1) Sulphur dioxide.
 - (2) Bromine.
 - (3) Chlorine.
 - (4) Higher oxides of nitrogen (as when dynamite burns instead of exploding).
- (c) Gases physiologically inert, but which induce asphyxia merely because of insufficient presence of oxygen.
 - (1) Carbon dioxide
 - (2) Nitrogen ("Black Damp").
 - (3) Hydrogen.
 - (4) Methane (Fire Damp.)
- (d) Gases physiologically inert except in respect to their affinity for hemoglobin.
 - (1) Carbon monoxide (affinity for hemoglobin 250 times as strong as oxygen, causes more deaths than all other gases combined).

—Tech. Paper No. 82, U. S. Bureau of Mines.

PUBLIC HEALTH LABORATORY NOTES

Abstracted by ARTHUR LEDERER, M. D.

Wassermann Test with Secretions, Transudates and Exudates in Syphilis.—The Wassermann test was performed with milk, saliva, seminal fluid, exudates and transudates from syphilitics. An antisheep hemolytic system, water bath incubation and a cholesterolized antigen were used in performing the test. Wassermann tests with the heated serum of each patient were conducted with the same antigen and with the same technic. All yielded a positive reaction. All specimens were first titrated for anticomplementary activity. Milk and saliva were found to be highly anticomplementary. Nineteen specimens of milk were examined; positive Wassermann tests were obtained in three. Twenty specimens of saliva were examined; a weakly positive Wassermann test was obtained in one. Thirty specimens of seminal fluid were examined. A moderately positive Wassermann test was obtained in one. Ten specimens of aqueous fluid from the anterior chamber of the eye were examined. All yielded a negative test excepting two in which the test was doubtful. Eleven specimens of exudates and transudates were examined. All yielded a positive Wassermann test. The degree of positive Wassermann reaction closely paralleled the reaction obtained with blood from the same patient. Evidence is presented which supports the belief that the complement-fixing antibody in spinal fluid is in all probability dual in origin, neutral as well as hematogenous. The presence of the complement-fixing antibodies in exudates and transudates from syphilitics is regarded as derived from the plasma of the blood. The Wassermann test was performed with the surface fluid from a number of chancres, and with the saline extract of syphilitic nodules removed from the testicles of syphilized rabbits. All the tests performed with chancre fluids yielded almost uniformly ++++ reactions. The reaction performed with saline extract of syphilitic testicular nodules yielded positive results. The control reactions in both studies were negative. These positive reactions support

the belief that at the site of syphilitic lesions there may occur a local formation of complement-fixing antibodies. The reaction in these circumstances is styled the "local" Wassermann test. The practical value of the "local" Wassermann test is pointed out as a possible aid in differentiating syphilitic from nonsyphilitic lesions, particularly when applied to chancre fluid as a means to the early diagnosis of syphilis.—Joseph V. Klauder and John A. Kolmer, *Jour. A. M. A.*, 76, 1635 (1921).



Method for the Intravenous Injection of Guinea-Pigs.—Up to the present time two well-known methods have been employed for the intravenous injection of substances into guinea-pigs, namely, the jugular vein and the ear vein methods. By certain investigators the first method is considered objectionable by reason of the fact that when the jugular vein is used it is exceedingly difficult to control the head of the animal without interfering with the operator's movements when making the injections. The marginal vein of the ear which is advocated by Rous can be employed only in selected animals and therefore is not especially adapted for routine use. A method for routine work which seems to have a distinct advantage over the preceding methods has been elaborated recently. This makes use of the comparatively large superficial vein lying on the dorsal and inner aspect of the hind leg of the animal. This vein nearly always runs diagonally across the leg from the dorsal aspect below to the inner aspect above. To use the above vessel for intravenous administration an operating board has been devised which permits the operator to manipulate the hind legs of the animal freely and at the same time does not prevent the legs from being securely tied.—George B. Roth, *Jour. Bact.*, 6, 249 (1921).



Growth of *Bacillus Influenzæ* in Hemoglobin-free Media.—It is shown that *Bacillus influenzae* will grow profusely in hemo-

globin-free media consisting only of plain broth and emulsions or extracts of mucoid bacilli and *Bacillus proteus*. The emulsions and the extracts can be boiled and filtered through Berkefeld filters without losing their growth-inducing property. The growth-stimulating effect of the bacterial extracts is possibly due to substance belonging to the class of the so-called vitamins.—Theodor Thjötta, *Jour. Exp. Med.*, 33, 763 (1921).



Quantitative Serum Reaction for Diagnosis of Syphilis.—The authors describe a new complement fixation test for syphilis which they claim is far more dependable than the Wassermann test. They have given it the name "sigma" reaction. Use is made of two standardized saline suspensions of different concentrations made from a mixture of alcoholic heart extract and cholesterin and the readings are expressed in terms of standard flocculation units. The "sigma" reaction gave positive results in 18% more cases than the Wassermann reaction in a series of tests. It only failed in five cases to reveal the presence of syphilis, while the Wassermann reaction failed in 59 cases. In the case of cerebrospinal fluids the Wassermann reaction is as delicate as the "sigma" reaction. This, no doubt, because more cerebrospinal fluid than serum is employed in the Wassermann reaction. In the case of serum, however, the Wassermann reaction has proved less sensitive. A treated case of syphilis will sometimes continue to give a positive reaction after the Wassermann reaction has become negative.—G. Dreyer and H. K. Ward, *Lancet (London)* No. 5097, p. 956 (1921); *Jour. A. M. A.*, 76, 1709 (1921).



Blood Grouping in Malignant Disease.—The blood group of 50 cases of malignant disease has been determined by authors and the incidence of each compared with that in 125 cases of other diseases and 50 normal persons. It is found that, while persons belonging to all four groups are liable to malignant disease, those in Groups I and III appear to be peculiarly susceptible, and the clinical type of disease is, generally speaking, more malignant.—W. Alexander, *Brit. Jour. Exp. Pat.*, 2, 66 (1921); *Jour. A. M. A.*, 76, 1613 (1921).

Influence of the H-ion Concentration on the Growth of *B. Typhosus* in Mediums Containing Bile or Bile Salts.—Bile of oxen, hepatic duct bile of rabbits, bacto "desiccated ox bile," sodium glycocholate and taurocholate in 1% concentration in a 0.01% "Difco" peptone-phosphate solution at a pH 7.0 are growth-enhancing for *B. typhosus*, while greater amounts, such as 3 to 30%, greatly inhibit proliferation. At pH 8.4 the same bile specimens or their salts acquire either inhibitive, bacteriostatic or germicidal properties. The more concentrated the mediums are in biliary salts, the greater is their effect on the viable cells. Even small amounts of bile salts, such as 0.5%, destroy the inoculated bacteria in 24 hours. At pH 8.4 glycocholates are more antiseptic than taurocholates, while the same salts in the same concentration may be stimulative at a pH 7.0.—P. Schoenholz and K. F. Meyer, *Jour. Inf. Dis.*, 28, 588 (1921).



Autovaccine from Sputum.—The author treats sputum in a Petri dish with a thin layer of 4% solution of glycerin. As the sputum dissolves, the tubercle bacilli proliferate, and by the sixth day, he says, they can be used, after centrifuging, for an autogenous vaccine without further cultivation.—R. Korbsch, *Zeitsch. Tuberk.*, 33, 332 (1921); *Jour. A. M. A.*, 76, 1544 (1921).



An Improved Anaërobie Jar.—A description is given of a modification of the anaërobie jars of McIntosh and Fildes and of Smillie in which the oxygen is consumed by combustion with hydrogen under the catalytic action of platinized or palladinized asbestos. The special advantages of the apparatus described reside in its greater safety and in the fact that the catalyzer is heated electrically after the jar is closed and may be reheated at any time during incubation without opening the jar.—J. Howard Brown, *Jour. Exp. Med.*, 33, 677 (1921).



The Renal Function Test in Urines Containing Bile and Blood.—As the phenolsulphonephthalein test for estimating renal function is based on a colorimetric determination, it follows that foreign coloring matter in the urine introduces an error, and that any considerable amount of coloring

matter vitiates the test. Bile and blood are the two common sources of color in the urine that render the method inaccurate. The method described removes both bile and blood. It is performed as follows: Phenolsulphonephthalein solution (1 c.c.) is injected into the deltoid muscle in the usual manner, and the urine collected after the usual interval of two hours and ten minutes. This specimen of urine is diluted up to 500 c.c. with tap water. To 20 c.c. of this diluted urine are added 20 c.c. of a saturated alcoholic solution of zinc acetate, which precipitates out bilirubin and hemoglobin. Red cells are carried down with the precipitate. Filtration yields a clear solution, now free of bile pigments and hemoglobin. Twenty cubic centimeters of this clear filtrate is made alkaline with 5 c.c. of saturated sodium hydroxid solution to bring out the full color of the dye, and made up to 40 c.c. with tap water. This solution is clear and is read directly against a known standard solution of phenolsulphonephthalein. In order to correct for dilution, the percentage reading is multiplied by 2. In each case the loss of phenolsulphonephthalein, when the final filtrate was compared with a standard in the Duboscq colorimeter, was so small as to be negligible. In those preparations containing bile, all traces of bilirubin had been removed, as demonstrated by the iodine test for bile. In those preparations containing blood, all traces of hemoglobin or hemoglobin derivatives had been removed, as shown by the absence in the final filtrate of characteristic spectroscopic absorption bands. All the resulting filtrates were clear. In every case the final filtrate could be read directly and satisfactorily against standard solutions of phenolsulphonephthalein.—C. Sidney Burwell and Chester M. Jones, *Jour. A. M. A.*, 77, 462 (1921).



Method for Cultivation of Blastocystis.—The culture medium used is made of human blood serum and 0.5 per cent sodium chlorid solution. The salt solution is sterilized in the autoclave and the serum added after inactivation at 55 C. for one-half hour. The pooled serum of several individuals has been used instead of that from a single individual, although no work has been done to

show whether or not one serum may be inhibitory while another is favorable to the growth of blastocystis. This medium is faintly alkaline to litmus. The medium is distributed in narrow test tubes in quantity sufficient to give a column of fluid at least 100 mm. high. No growth takes place at the surface of the tube, and the parasites multiply best at the lower portion of the tube, evidently needing little free oxygen for their growth.—H. P. Barret, *Ann. Trop. Med. Parasit. (Liverpool)*, 15, 113 (1921); *Jour. A. M. A.*, 77, 647 (1921).



The Effect of Cholesteremia on the Results of the Wassermann Test.—The feeding of 1.25 grams of cholesterol per kilo of body weight to rabbits results in an enormous accumulation of cholesterol in the blood, an accumulation that persists, in some instances, for several days after the feeding is stopped. The hypercholesteremia produced by feeding rabbits large amounts of cholesterol does not cause the blood serum of these animals to give a positive Wassermann reaction. There is no relationship between the cholesterol content of the blood serum of rabbits and the results of the Wassermann test, all of the animals experimented upon giving a consistently negative reaction despite the enormous increase in the cholesterol content of their blood serum resulting from the feeding of this substance.—Charles F. Craig and William C. Williams, *Am. Jour. Syph.*, 5, 392 (1921).



Viability of Spirocheta Pallida in Excised Tissue and Autopsy Material.—Spirochetes kept in serum or moist tissue, either human or animal, may retain slight motility as long as three months or more. Reliable dark-field examinations can be made on tissues or fluids collected several hours previously, provided they are kept moist and cool. Complete drying is probably fatal to the Spirocheta pallida, since each of the rabbits inoculated with dried spirocheta on scalpels failed to develop syphilitic lesions. Spirocheta pallida may, and in this case did, remain virulent in autopsy material for twenty-six hours or longer.—George R. Lacy and Samuel R. Haythorn, *Am. Jour. Syph.*, 5, 401 (1921).

Factors Relating to the Serum and Serum Control Tube in the Wassermann Test.—

The antibody content of serum from mixed venous and arterial blood collected by pricking a finger, and of venous blood collected by venipuncture, is identical. Blood sera collected from a finger or by cupping are more likely to become anticomplementary than sera collected by aseptic technic and venipuncture, due to greater chances for bacterial contamination. Syphilitic sera collected at once by defibrinating and centrifuging blood contain as much complement-fixing antibody as sera allowed to separate for one to forty-eight hours. When preserved human sera yield a stronger complement-fixation reaction than the same sera while fresh, the difference is due to the presence of anticomplementary substances (antilynsins) or the deterioration of natural hemolysins. The anticomplementary activity of a serum is greatly modified by whether or not it is used unheated or heated and by the presence or absence of natural hemolysins. The presence of anticomplementary substances (antilynsins) influences the degree of positiveness of a reaction and explains in part the differences observed with portions of the same blood in different laboratories; technic should, however, discover the presence of these antilynsins and render all laboratory reports uniform insofar as positive or negative reactions are concerned. The serum control tube should not carry more serum or spinal fluid than the main tube or tubes if an antishoop or antiox hemolytic system is being employed in order to avoid the influence of natural hemolysins; with an antihuman or antichicken hemolytic system the use of a slight excess of serum and spinal fluid in the control tube serves the purpose of caution, but is not absolutely essential. The guiding principles for the collection of blood and spinal fluid for the Wassermann and other complement-fixation tests are avoiding or minimizing the opportunities for development of anticomplementary substances (antilynsins) and the occurrence of falsely negative reactions; these principles are presented and discussed.—John A. Kolmer, *Am. Jour. Syph.*, 5, 439 (1921).

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Factors Influencing the Amount of Hemolysin Employed in Complement-Fixation

Tests.—It is advisable to titrate the hemolysin each time complement-fixation tests are conducted in order to make proper adjustment for the presence of natural hemolysins which may be present in the complement serum. In titrating the hemolysin the amount of complement employed should be neither too large nor too small, but represent an average unit based upon experience. The same amount of hemolysin should be used in the complement titration and complement-fixation tests; under these conditions the most sensitive reactions occur when one or five units of hemolysin are used. The use of these amounts of hemolysin may, however, result in too close adjustment of the hemolytic system yielding unsatisfactory controls. Best results were observed with antishoop, antiox, and antihuman hemolytic systems when the complement was titrated and the complement-fixation tests conducted, with two units of hemolysin.—John A. Kolmer, Elizabeth Yagle, Anna M. Rule, *Am. Jour. Syph.*, 5, 451 (1921).

†

Complement-Fixation Tests With Two Antigens.—

Two antigens whose reliability has been established form a valuable check upon one another for routine public health laboratory work. Cholesterinized antigen gave a higher percentage of positive and doubtful reactions. This bears out the usual observation that cholesterinized antigens are more sensitive than crude alcoholic antigens. Sera are occasionally found which are undoubtedly positive but which due to some peculiarity of the serum, do not react with one of the antigens used. Used alone the cholesterinized antigen must be considered a rather unreliable antigen likely to give false positives. Used in connection with the crude alcoholic antigen it is of great value in detecting slight reactions in treated cases where further treatment is indicated or where at least further observations to determine and increase in antibody content in the serum is desirable. It is also of value in picking up slight reactions early in the course of the disease which will later undoubtedly become positive with a less sensitive antigen.—Mae E. Larkin, *Am. Jour. Syph.*, 5, 476 (1921).

The Ionization Constants of Glycero-phosphoric Acid and Their Use As Buffers, Especially in Culture Mediums.—Disodium glycerophosphate is a solvent for calcium and magnesium and perhaps other salts, and when used in proper concentration prevents much of the objectionable precipitation of phosphates on the alkaline side of neutrality. This property suggests its employment in culture mediums, in the washing of agar, in the precipitation of casein, and for the study of the effect of the calcium and magnesium ions on the growth of various organisms. The value of the glycerophosphates as food substances is under consideration. The fact that their ionization constants are substantially the same as those of the nonglycerinated phosphates makes possible this substitution for these salts as buffers. They should be decidedly superior to the latter as buffers, owing to their stability in the lower alkaline ranges where, for example, an initial Ph of 8 has been maintained in broth after autoclaving.—Ralph R. Mellon, S. F. Acree, Pauline M. Avery and E. A. Slagle, *Jour. Inf. Dis.*, 29, 1 (1921).



The Change in the Hydrogen-Ion Concentration in Soft and Pyrex Glass Tubes.—Heating unbuffered solutions in soft glass tubes greatly affects the hydrogen-ion concentration. Heating mixtures of Na_2HPO_4 and KH_2PO_4 in hard glass tubes does not affect the hydrogen-ion concentration during the heating, while prolonged heating in soft glass tubes dissolves out alkali in excess of the amount which can be controlled by the buffer salts. Heating an alkaline solution of this mixture in soft glass causes a greater lowering in the hydrogen-ion concentration than acid solutions. A neutral solution does not change appreciably during heating even in soft glass tubes. Heating the juices pressed from canned corn, peas, string beans, spinach, beets, sweet potatoes and pumpkin in soft glass tubes affects the hydrogen-ion concentration less than in hard glass tubes. A longer time is necessary to destroy the same suspension of spores in corn juice if heated in soft glass tubes than in hard glass tubes. No general statement can be made regarding the relative merits of hard and soft glass tubes in the determination of the thermal death point. The type of glass to be used for this pur-

pose must be determined for each solution. In thermal death point determinations the hydrogen-ion concentration of the solution must be known during the entire period of heating.—J. R. Esty and P. H. Cathcart, *Jour. Inf. Dis.*, 29, 29 (1921).



Changes in the Alkali Reserve, Sugar Concentration and Leukocytes of the Blood in Experimental Infections.—Depression of the alkali reserve of the blood in rabbits by intravenous injections of pathogenic bacteria is accompanied by a transient hyperglycemia, the degree of hyperglycemia apparently depending on the extent of alkali reserve diminution. Subcutaneous administration of carbonate or bicarbonate solutions does not prevent the acidosis produced by these injections of bacteria. Injections of acid potassium phosphate solutions depress the alkali reserve of the blood, this lowered alkalinity being associated with a hyperglycemia and by changes in the number of leukocytes similar to those following injections of bacteria. The concentration of sugar in the blood seems to be independent of the changes in the number of leukocytes.—Edwin F. Hirsch, *Jour. Inf. Dis.*, 29, 40 (1921).



Bacteriologic Studies of the Upper Respiratory Passages.—Hemolytic streptococci are common in the nasopharynx and nasopharyngeal vegetations. From nasopharyngeal swabs and the surface of the adenoids hemolytic streptococci were recovered in 55%; from the depths between the folds and of the crypt-like depressions of the adenoids of the same persons, in 61% in larger numbers. The excised tonsils of the same patients revealed hemolytic streptococci in still larger numbers in 95%. These streptococci agree in their morphology, cultural characteristics, fermentation reactions and pathogenicity, and are practically identical with hemolytic streptococci from various human sources. The adenoids, like the tonsils, are to be considered as common foci harboring hemolytic streptococci. To ascertain more accurately the incidence of pneumococci in the throat and nasopharynx cultures were made from the extirpated adenoids and tonsils. In a series of 103 adenoids, pneumococcus occurred in 65%,

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THE USE OF CENTRIFUGES FOR DEWATERING SLUDGE

T. CHALKLEY HATTON

Member, American Society of Civil Engineers

To be presented before the Sanitary Engineering Section, American Public Health Association, by the Committee on Sewerage and Sewage Disposal, Kenneth Allen, Chairman, at the 50th Annual Meeting, New York City, 1921

EVERY engineer engaged in the study of sewage disposal by modern methods recognizes that the art is divided into two distinct problems—the partial purification of the liquor and the disposal of the sludge—and that the latter is, of the two, the more difficult to satisfactorily solve.

For many years—in fact up to the present—sludges produced by many of the English sewage disposal plants were deposited upon ground and ploughed in. After a few seasons of this practice, the tracts of ground set aside for this purpose became sour and unable to digest the organic matter. They were, therefore, abandoned.

The largest sewage disposal plant in England, the Birmingham plant, is now lagooning the sludge, monopolizing a large tract of most excellent ground which could otherwise be used for the production of foodstuffs of which the country stands so greatly in need. This method not only destroys the real value of the ground but constitutes a nuisance to the immediate neighborhood.

To sum up my impressions after a recent visit to many of the sewage disposal plants of England: There was none (except disposal at sea) where the disposal of the sludge was being handled so as to avoid a nuisance. In fact, it was creat-

ing a far greater nuisance than the clarification of the sewage, and but little progress appears to have been made since my last visit in 1907.

I had an opportunity to compare the relative advantage of the methods employed in Germany and England.

The sludge problem, my observation showed, was studied with painstaking care and considerable skill by the German engineer. Recognizing that he had a product for which there was a market, he proceeded to make sure of this market by preparing and delivering his product so as to give satisfaction to the ultimate buyer.

The English engineer, on the other hand, starts with the assumption that the English farmer and truck grower will not use sludge in any form, no matter how well prepared and conveniently delivered. He ignores the requirements of his potential customers and produces his sludge in a form best suited to himself. It is to be regretted that the American engineer has adopted the same negative point of view.

Modern agricultural chemistry shows that all sludges produced by sewage disposal plants contain sufficient fertilizer value in the form of nitrates (ammonia and humus) to warrant their use by the farmer or small truck gardener, provided

the cost of handling is not too great. That the sludges produced from plain sedimentation may be profitably used by the agriculturist when the wagon haul does not exceed five miles and providing the sludge contains not more than 75 per cent moisture, was demonstrated by the Agricultural Department of the late Imperial German Government as far back as 1912. The German Government from that time on prepared and distributed literature instructing farmers in the most approved ways of using sludge as a fertilizer.

What has been the result? Hamburg, Hanover, Frankfurt-on-the-Main and many other German municipalities are disposing of their sludge to the surrounding community so effectually as not to have a dozen wagon-loads left on hand any one night. In fact, the demand is so great that each customer is given his own day in the month when he must come for his apportionment, for which he pays a certain sum fixed by the government. While this sum is not sufficient to meet the cost of dewatering the sludge, it defrays at least a part of the expense. More important is the fact that the sludge nuisance is eliminated while the prosperity and productivity of the community are materially advanced.

Now how has Germany accomplished what none of the rest of the world has been able to achieve?

First, by preparing its product to meet conditions under which the consumer can handle it.

Second, by educating the consumer, through national and local government bureaus as to the value of the product and the best methods of using it.

As a result of these two important services, a market for all the sludges produced has not only been found but is being extended more rapidly than the demand can be met.

That sludge which has been properly prepared need not look far or long for a buyer has been proved by at least one progressive English municipality. The

city of Bradford, after extracting the excess grease from its sewage through filter presses, breaks up the cake by means of a disintegrator and thus finds a ready and profitable market for it among the fertilizer manufacturers.

Notwithstanding the fact that Bradford's raw sewage is notoriously offensive, the neighborhood around the disposal works is free from unpleasant odors. This is due in part to the effective methods employed and in still greater part to the prompt shipment of the sludge to the consumer.

The Germans have prepared their sludges by partial dewatering through both filter presses and centrifuges and the sludges so treated are produced mainly from plain precipitation. The filter presses in use are quite similar to the types in common use in America from which about the same results are obtained. The centrifuges, however, are quite different from any the writer has heretofore seen, and are worth a brief description.

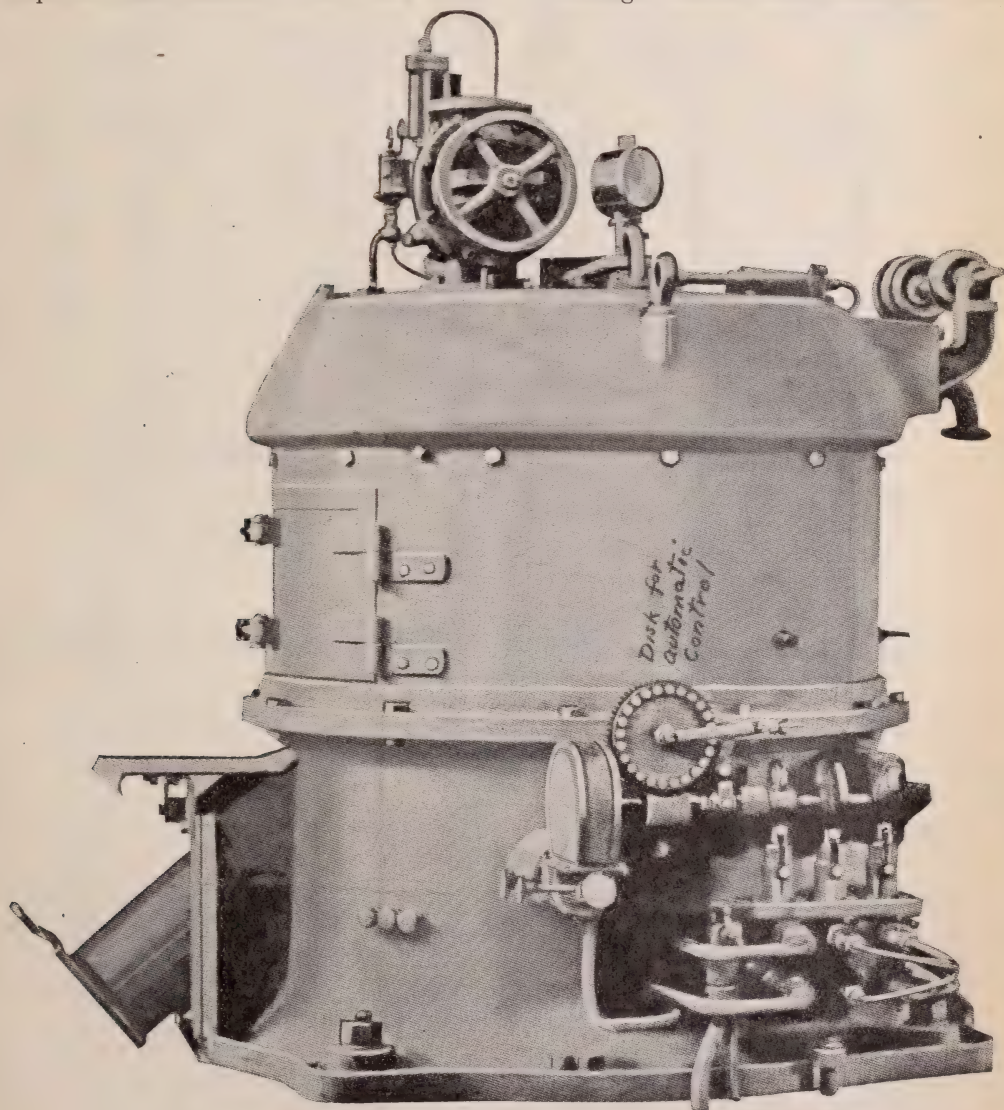
The machine is made by the "Hanomag" Works at Hanover-Linden, Germany. It was designed by Dr. ter Meer, director of the Hanomag plant and Mr. George Froboese, his master mechanic. During the war, the American patents became the property of the custodian of enemy property and were purchased by the Barth Engineering and Sanitation Company of New York City, which changed the name of the machine to "Besco-ter-Meer."

Unlike most centrifuges, the machine is continuous and automatic in its operation and is devoid of all screens. It can be set to feed, discharge, post centrifuge and scoop at any cycle or combination without any manual control. It builds up its cake against a solid stationary plate and unloads it by dropping below this plate the depth of the bowl, the cake being thrown out of the bowl by centrifugal force into a chamber equipped with revolving scrapers which remove it to the point of discharge.

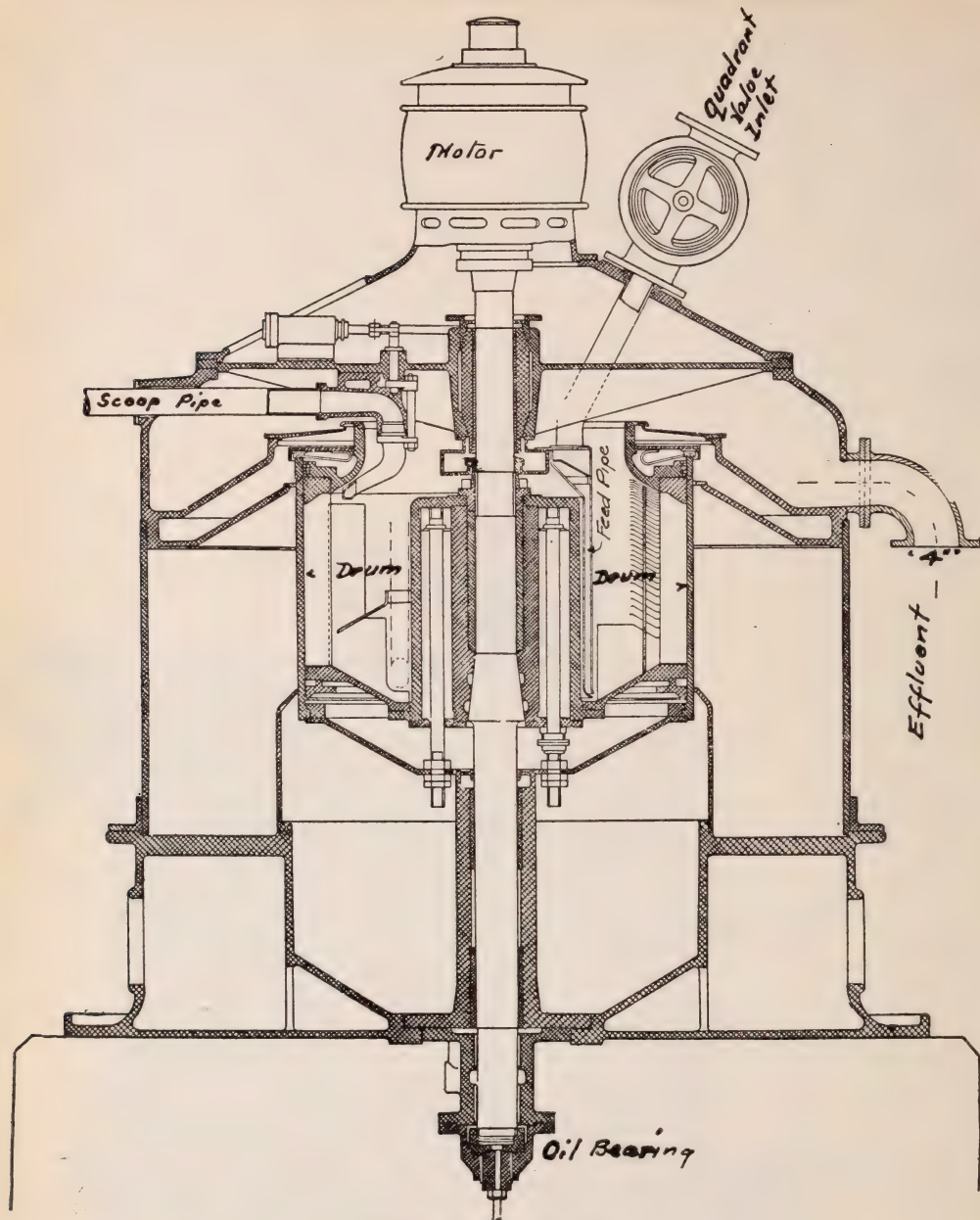
Because the machine is of more than passing interest to the sewage disposal engineers and because we have been operating one in the testing station of the city of Milwaukee for six or eight months, the writer has included two cuts of the enlarged machine showing a photograph of the machine as set up, and a cross section through the center. The important dimensions are as follows: Inner diameter of drum 44 inches; drop of drum when discharging, 20 inches. Depth of cake chamber to overflow zone,

24 inches. Thickness of cake formed, 9 inches. Operating oil pressure to support shaft drum and motor, 210 pounds per square inch. Total height of machine including motor, 10 ft. Diameter of outer housing, 6½ ft. Weight of machine, approximately 10 tons, R. P. M. 1000. Main drive motor, 35 h. p. slip ring. Oil pump motor 10 h. p. Automatic control motor, 2 h. p. Inlet valve designed to automatically control rate of feed during cycle.

Average records taken from two dis-



"BESCO-TER-MEER" CENTRIFUGE



CROSS-SECTION OF CENTRIFUGE

posal plants where these centrifuges have been in use for several years will fairly illustrate the ability of the machine to dewater sludges from plain sedimentation. At the Herrenhausen Sewage Disposal Plant, which treats the sewage from Hanover-Linden, amounting to 40 million gallons daily, plain sedimentation only is carried out for clarification. The time of detention is two hours. Every

two days one of the 12 sedimentation tanks is emptied and the precipitated solids, amounting to 70 per cent of the total suspended solids in the raw sewage, is run to sludge storage tanks.

This sludge, containing 96 per cent moisture, passes through a 9 m.m. mesh screen and into one of three 36-inch centrifuges, each of which delivers 11 cubic yards of cake per hour, containing from

72 to 75 per cent moisture, the filtrate being returned to the raw sewage. The cycle of operation is four minutes, which embraces filling, centrifuging and discharging. Each machine requires 25 h. p. motor to operate and one man looks after the operation of all the equipment in the centrifuging house. Screw conveyors carry the cake from the machines to outside the building where it is loaded upon wagons by the farmers and hauled away.

The sewage disposal method in use at Frankfort-on-Main consists of fine screening, three-quarters of an hour detention in sedimentation tanks and dewatering of sludge. Seventy-five per cent of the suspended solids are removed by sedimentation and these are removed from the tanks after about seven days' operation, becoming quite septic before further treatment.

Eight 36-inch centrifuges are installed, each of which operates 1200 hours per month, producing 15,000 cubic meters of cake with 70 to 75 per cent moisture, or about 16 cubic yards per hour, the filtrate being returned to the raw sewage. Each centrifuge is operated by a 15 h. p. motor. Counting the screen, agitator and oil accumulator, each centrifuge requires 20 h. p. to operate and one skilled laborer looks after all the plant inside the centrifuge house. The sludge is carried from the centrifuges by means of screw conveyors to direct heat dryers where the moisture is reduced to 15 per cent.

During the war, the drying plant was cut out and the sludge cake from the centrifuges has since been conveyed by hand-pushed cars to a dump, from whence it is removed, as fast as deposited, by farmers and truckers who pay four marks per wagonload containing 2.6 cubic yards.

Compare this extremely sanitary method of disposing of sewage sludge, where no man handles it except to load the partially dried material in wagons, and where it cannot be seen from the time it leaves the sedimentation tank until it reaches the dump cars, with the present

unsanitary and highly offensive method used, for instance, in the sewage disposal plant of the city of Baltimore, or, in fact, in any other of the modern plants in this country and England.

It is the writer's opinion that the English and American engineers have failed to grasp the idea that satisfactory sewage disposal is not accomplished by merely treating the liquor so that the effluent shall not produce a nuisance to the body of water into which it is finally discharged. It is no less essential that the sludge produced from such treatment should be so disposed of as to reduce to a minimum the nuisance and danger to workmen engaged at the disposal plant, and to the adjacent neighborhood. If, in doing this, the values contained in the sludge can be conserved, and two blades of grass be made to grow where one is now growing, the common welfare is undoubtedly improved.

The tendency in most disposal plants is to get rid of the sludge in the cheapest manner possible regardless of the temporary or permanent nuisance resulting. Until this tendency is overcome, the disposal of sewage will not prove satisfactory from the public viewpoint.

The writer believes from his experience in operating and viewing the operation of centrifuges in dewatering sewage sludges and water-laden solids in the industries that centrifuges of the proper type can be economically used in a great many disposal plants in this country and in Europe to displace the crude methods now practiced; that centrifuging will prove far more sanitary; that it will dewater the sludges so that they can be easily and profitably handled by the farmer and trucker and will thus create a steady market for all produced. He firmly believes it the province of the Sanitary Engineering Section of the American Public Health Association to put a little "pep" into the Bureau of Soils of the Federal Agricultural Department, with the object of inducing the latter to carry out intelligent growing experiments with

sewage sludges from the various types of plants, to publish the results of such experiments and to give these publications proper circulation among those most likely to benefit therefrom.

Dr. Nasmith, of the Toronto Board of Health, Dr. Bartow, late of Urbana, and a few others, have carried out some experiments to show the probable value of activated sludge. All of these experiments, particularly those conducted by Dr. Nasmith, have demonstrated the growing value of the sludge as compared with other fertilizers and the natural soil.

In estimating the cost of centrifuging sludge per capita, the writer would use the Hanover plant as fairly representing what has been done for several years, and applying American prices.

Hanover operates two centrifuges for 10 hours per day. Each machine uses power at the rate 10 k. w. per hour. One skilled laborer is employed inside and one common laborer outside. The population of Hanover is 320,000. At present prices, the two centrifuges and equipment would cost \$32,000, which includes tanks, screens, and conveyors. The building should be built for \$10,000.00. Estimating 6 per cent for interest and 6 per cent for depreciation, plus \$200.00 per machine for minor repairs; three cents per k. w. hour for current; \$5.00 for skilled and \$4.00 for common labor and 8 hours per day, we have the following costs:

12 per cent on \$32,000.....	\$3,840.00
2 per cent on \$10,000 (building).....	200.00
Minor repairs, \$200 per machine.....	400.00
52560 k. w. hrs. power at 3c.....	1,576.80
313 days' labor at \$9.00.....	2,817.00
10 per cent for contingencies.....	883.38

Total annual cost\$9,717.18
 $\$9,717.18 \div 320,000 = 3c$ per capita.

Experiments have been conducted at the Milwaukee Sewage Testing Station since October, 1920, upon a Besco-ter-Meer 36-inch centrifuge in dewatering activated sludge. The machine, as first delivered, was designed to operate at 900 R. P. M. which did not produce sufficient centrifugal force to produce a cake low

enough in moisture to handle satisfactorily. The speed was increased to 1300 to 1350 R. P. M. and much better results secured.

Activated sludge has an average specific gravity of 1,005 and is flocculent but the floc is of such a character as to be readily broken up and reduced to very fine particles when violently shaken. It is therefore extremely difficult to dewater by means of any apparatus which destroys the floc.

After somewhat changing the design of the drum so that a more uniform velocity of flow of sludge passing through it could be maintained, we have been able to reduce the moisture from 98 to 83 per cent at a rate of about 4 pounds of wet cake per minute, removing from 70 to 80 per cent of the suspended and settleable solids in the sludge. This produces a cake which can be easily handled but the filtrate, containing from 20 to 30 per cent of the suspended and settleable solids in the sludge, is very difficult to satisfactorily treat.

If it is run back into the raw sewage, the sludge begins to pyramid until the aeration and sedimentation tanks accumulate more sludge than the plant can handle. Many experiments have been made to overcome this condition but up to the present time none has been successful.

The writer is not yet prepared to state that the centrifuge will or will not successfully dewater activated sludge but he feels sure, after having three types operated at Milwaukee and viewing the results obtained in America and Europe by centrifuges, both in industries and sludge disposal, that there is a need for them in the latter service, especially where sludges from plain sedimentation are to be handled.

In closing this brief paper, there are two points to which I wish to call your particular attention; the *first* is the necessity for the sanitary engineer to give greater study to better methods for

disposing of sludges from sewage disposal plants. In considering this phase of the subject, it might be well for the engineer to look into the general question of the conservation of nitrogen produced by sewage sludges and what it means to communities surrounding the place where the sludges are produced. Mr. Kenneth Allen, in his paper on "Nitrogen," published in the *Engineering News Record* of August 25, 1921, p. 311, touches upon this matter and refers to Dr. Fowler's very valuable paper on "The Conservation of Nitrogen." Some time might also be devoted to the study

of the values which are obtained from tankage by the large packing houses of this country. After absorbing this information the conclusion will certainly be reached that the values in sewage sludges are well worth conserving when handled in a sanitary manner and the sludges produced in a condition which can be practically handled by the consumer. The *second* is the desirability of using the Association's influence in securing the services of the Federal Department of Agriculture in thoroughly investigating the value and use of sewage sludges as a fertilizer.



A PRELIMINARY REPORT ON THE RESULTS OF A RECENTLY PASSED ORDINANCE REQUIRING A PHYSICAL EXAMINATION OF ALL PERSONS CONNECTED WITH FOOD HANDLING IN RESTAURANTS, BAKERIES, GROCERY STORES, ETC.

L. B. GLOYNE, B.S., M.D.

Commissioner of Health and Sanitation, Kansas City, Kansas

To be read before the Food and Drugs Section, American Public Health Association,
50th Annual Meeting, New York City, 1921

ON June 28, 1921, the commissioners of Kansas City, Kansas, passed an ordinance which made it unlawful for any person affected with any infectious disease in a communicable form, or a person who did not have a health permit, to engage or serve in any work, occupation or employment involving the handling of food, liquid or material intended for human consumption, or dishes or other articles used in the preparation or serving of food. The ordinance also provided that the Commissioner of Health and Sanitation shall make the examination free, but the applicant for the permit to work may submit the report of a duly authorized physician, and if the Commissioner of Health and Sanitation is satisfied that the applicant is free from any contagious disease he may issue a permit. The ordinance was copied from

the ordinance supplied to the writer by Dr. Hibben, health officer of Pasadena, California. Of the few changes made, the most outstanding was changing the name of the card given to the food handler from a "Health Certificate" to a "Permit to Work" card.

Before giving the results of our examination, it may be well to state briefly our plan of procedure. The examination is held between the hours of two and four each day, Friday, for women only, the other days for men. The food inspector goes out and gives written orders to about thirty persons to appear for examination each afternoon. A carbon copy of these orders is kept and as soon as a person reports for examination his order slip is put in an "examined" file. If a food handler wishes to go to his family physician, the inspector furnishes

him with a regular examination card which must be completed and signed by the physician.

When the men report for examination, the food inspector fills in that part of the examination card which gives the family history, also the part which establishes the applicant's identity. The applicant if a man, then strips and is examined. In the case of a woman, part of her card is filled in by the inspector, and the applicant is sent to a nurse who asks the questions that refer to venereal disease and who also makes a vaginal examination and smear if indicated. The woman applicant is then sent into an adjoining room where a doctor makes an examination of the skin, nose, throat, chest, etc., and completes the history.

All food handlers who pass the examination are given a "Permit to Work" card. Smears, Wassermanns and sputum examinations are required, when the clinical history or physical findings indicate them. When a laboratory report is desired before a positive decision is made, the food handler is given a "Permit to Work" card containing a provisional clause. If the laboratory report is positive the card is then taken away from the applicant.

Up to the present time, 1,860 persons have been examined by the Kansas City Department of Health and Sanitation. Two hundred and forty-nine have been examined by a family physician. In addition to the 2,109 persons examined, the records show that 112 persons either left town or quit work as soon as the Department started to enforce the ordinance. From the stories that we gathered, the vast majority of those who left town and quit work did so because they felt sure that they could not pass the examination. Table No. 1 shows the disposition of the entire 2,109, by occupational groups and sex.

Table No. 2 shows how the questions were answered.

TABLE No. 1
DISPOSITION OF CASES BY OCCUPATION AND SEX

	Male	Female	Total
Hotel and restaurant workers examined and passed.....	369	331	700
Grocers, peddlers, bakers, etc., examined and passed.....	1,008	231	1,239
Restaurant examinations not complete	17	15	32
Grocers, peddlers, bakers examinations not complete.....	7	6	13
Restaurant workers refused permits	19	27	46
Grocers, peddlers, bakers, etc., refused permits	7	3	10
Restaurant workers quit work before examined	34	56	90
Grocers, peddlers, bakers, etc., quit work before examined.....	5	8	13
Total number persons handled..	1,432	711	2,109

TABLE No. 2
ANSWERS TO QUESTIONS

	Male		Female	
	Restaurant	Others	Restaurant	Others
Pleurisy	6	11	14	5
Pneumonia	41	46	31	7
Bronchitis	7	7	5	3
Abscess	4	17	2	2
Diphtheria	14	38	11	7
Ulcers	0	1	2	0
Typhoid	26	108	36	6
Tuberculosis	2	0	0	0
Any contagious disease in your home now?	0	0	0	0
Any one with tuberculosis?...	0	0	2	0
Successful vaccination against smallpox within seven years.	87	236	59	17
Successful vaccination against smallpox more than seven years	119	306	85	40
Vaccinated against typhoid....	46	78	6	5
Syphilis	21	6	1	0
Gonorrhea	80	75	2	0
Do you spit blood?.....	1	5	1	0
Do you cough mornings?.....	1	5	2	0
Have you lost weight recently?.	17	30	18	0

We examined the hotel and restaurant people first, and then the grocers, bakers, and soda fountain men. There seems to be such a difference between the two classes that I shall deal in this paper with the restaurant help as one class and all others as a second class. Note the marked discrepancy, as shown in the accompanying table, between the reports of the hotel and restaurant workers and the corresponding reports of the grocers, bakers, and soda fountain men. Either the hotel and restaurant workers are more honest as a class or else they have a greater liability to venereal infection.

Only two women admitted having had gonorrhea, while quite a number had a

discharge which proved to be gonorrheal. Either the women were not truthful in this matter or else they are ignorant. If they are ignorant, it shows all the more need for education along these lines.

A word regarding the advisability of accepting family physicians' reports as final and authoritative. Note that:

1. All of the persons examined by family physicians were reported to be in perfect health.

2. Practically all the family physician reports were on persons in the second class, i. e., the grocers, bakers, etc.

3. The second class shows more freedom from venereal and other diseases than the first class.

TABLE NO. 3

PHYSICAL AND LABORATORY FINDINGS

	Restaurant Workers		Grocers, Etc.	
	Male	Female	Male	Female
Discharge present....	18	81	2	45
Microscopically				
gonorrhea	18	23	2	4
Wassermann required	23	1	2	0
Wassermann positive.	6	1	1	0
Infective syphilis....	2	1	1	0
Discharging buboes..	1	0	0	0
Discharging ulcer				
(osteomyelitis?) ...	1	0	0	0
Sabies	0	0	1	0
Suspected tuberculosis				
(sputum negative) .	13	3	11	2
Hernia	3	0	21	0

As the report shows, very few contagious diseases were found outside of venereal diseases. I believe that the chief service rendered by the ordinance to date has been the locating of a large number of infectious venereal diseases. A number of these persons have started active treatment and they are all paying unwonted attention to their physical condition. The cases of suspected early tuberculosis have been put under close observation and as soon as a positive diagnosis is made they will be eliminated.

As the passing of the ordinance was vigorously opposed, we have adopted the

policy of giving persons examined the benefit of the doubt whenever possible. In other words, we have deliberately given the ordinance a liberal interpretation and have, during this early stage, granted permits even where suspicion existed. Too arbitrary action on our part in refusing to grant permits, may, we feel, defeat our own purposes, especially since the quitting of 112 persons and our refusal to grant permits to 54 others who were positively in the infectious stage were shown to have worked no little hardship on some of the restaurant people. After the ordinance becomes well anchored it will be easier to get action on the borderline cases.

Our ordinance provides that the permit card is good for one month or until revoked. We had hoped to make the examination every month or two, but without a special doctor to do the work, it will be difficult, if not impossible, to examine each person more than once in every three months. Because of the fact that the hotel and restaurant help seem to show a higher per cent of infection than the grocers, bakers, etc., and because there are more "drifters" in this class than in the other, I believe that it is desirable to examine them more often.



Standards for Industrial Sanitation.—The Pennsylvania Department of Labor in Industry has published a 25-page bulletin, under its *Safety Standards Series* (Vol. II, No. 3) covering the essential standards for industrial sanitation: administration, definitions, specifications, retiring rooms for females, toilet rooms, etc., attention to same, privies, chemical closets, ventilation thereof, washing facilities, dressing facilities, and drinking water.

ABSTRACT OF REPORT OF COMMITTEE ON THE ACCURACY OF CERTIFIED CAUSES OF DEATH

TO BE SUBMITTED TO THE SECTION ON VITAL STATISTICS

To be presented in full at the Fiftieth Annual Meeting of the American Public Health Association, New York City, November 14-18, 1921

SINCE the latest published report of the committee which appeared in 1918 as Reprint No. 440 from the *Public Health Reports*, the committee has submitted reports to the Section on Vital Statistics at the New Orleans meeting in 1919 and the San Francisco meeting in 1920. In its report made at New Orleans, attention was directed to a few minor changes which the committee desired to make in its prior report as published in Reprint No. 440. It also reported that subsequent to the publication of Reprint No. 440, a large mortality experience had been analyzed, on the basis of the committee's recommendations; that certain defects had been disclosed and that the committee, accordingly, requested authority to reconsider its former report. The report of the committee was accepted and the committee was continued. In its report at the San Francisco meeting in 1920, matters relating to its recommendations about the *accuracy* of certified causes of death were not included. Its report at that time was restricted to recommendations concerning the revision of the International List by an international commission which was to meet in Paris.

The only meeting held in 1921 restricted its discussions to the subject of the status of the report of the Paris Conference. It is now the sense of the committee that since at the Paris Conference the classification, on the basis of which the committee had made its recommendations, had been revised, it is impossible to make a final report at this time. The principal reason for this is that many of its former recommendations relate to title headings of the old International List, the captions of which have been changed, and the terms in-

cluded under which have also been changed. There would be further complications owing to the fact that at the present time the complete report of the Paris Conference has not been received in this country. If the committee were to offer its final report at this time, it would inevitably find itself in the position of having published many recommendations which it would later be compelled to change.

It is the sense of the committee that it should be continued and that during the coming year it should again hold meetings and take up title by title the revised International List with a view to making recommendations as to those which should be considered as reliable without autopsy or without specific supporting data, and those which should not be so considered.

HAVEN EMERSON,
Chairman.

GEORGE H. VAN BUREN,
Executive Secretary.

REPORT OF THE REPRESENTATIVES OF THE AMERICAN PUBLIC HEALTH ASSOCIATION TO THE THIRD DECENNIAL SESSION OF THE INTERNATIONAL COMMISSION FOR THE REVISION OF THE INTERNATIONAL CLASSIFICATION OF CAUSES OF SICKNESS AND DEATH, HELD AT PARIS, FRANCE, OCT. 11-15, 1920*

Your representatives sailed from New York on September 30, 1920, for Europe. Two days were spent in London in conference with members of the delegation from Great Britain, which in-

*The following report is presented for consideration to the American Public Health Association. It has not been acted upon by the Association. It was thought advisable to have the report in the hands of the members before presentation.

cluded the delegates from Scotland and Ireland. Your representatives arrived in Paris on October 10.

The International Commission convened on the morning of October 11. Sessions were held for five days under the presidency of Professor Roget of the Faculty of Medicine of the University of Paris. Dr. Jacques Bertillon was elected Secretary-General.

The titles of the Classification of 1909 were discussed seriatim, and in each instance votes were called for to determine whether each title-heading, and the list of terms included thereunder, should appear in the new classification in similar form and content as in the old, or whether changes should be made. Many additional titles were proposed. On several occasions the discussion developed such differences of opinion that committees were appointed representing the divergent interests. The reports of these committees were presented at subsequent sessions and voted on by the Commission. During the evening following each day's session, the delegates from the United States met and discussed the decisions of the day.

At the close of the last session of the Commission, the delegates signed their names to what purported to be a record of the votes and decisions of the Commission. The Secretary-General was authorized to prepare an official report using editorial discretion.

Three days after the final meeting of the Commission, four of the delegates from the United States (including one of your representatives) and delegates from Great Britain presented to Dr. Bertillon a list which they believed to represent the action of the Commission on each title heading. Your representative,

who was in attendance at this conference, left the conference with the distinct impression that the list would appear in substantially the form given below in the right-hand column.

On December 22 there was received by several delegates in the United States a mimeographed copy of a list which had been sent out by the Secretary-General. This differed in many respects from that submitted to Dr. Bertillon at the conference of October 18, referred to above.

On December 16, 1920, a conference was held in Paris which was attended by one of the delegates from the United States, two from Great Britain, and one from the International League of Red Cross Societies. As a result of this conference, the revised classification as originally sent out by the Secretary-General was modified in some respects and it was thereby brought more nearly in agreement with your representatives' understanding of the votes of the International Commission.

The classification, as printed below in the left-hand column, is the official classification provided by the Secretary-General, but modified in minor respects to meet the requirements of American statistical practice. This classification is now in use by the United States Census Bureau and is widely used by registrars of vital statistics in states and municipalities of the United States and by other statistical offices. The classification printed below in the right-hand column has no official status, and is given for purposes of record and comparison.

(Signed) HAVEN EMERSON,
GEORGE H. VAN BUREN,

Representatives of the American Public Health Association.

INTERNATIONAL LIST OF CAUSES OF SICKNESS AND DEATH

(Third decennial revision by the International Commission, Paris, Oct. 11-14, 1920.)

[The lines preceded by a star indicate certain additional subdivisions which the United States Census Bureau intends to use to facilitate comparisons with statistics of previous years. A few other subdivisions

(As understood on October 18, 1920, by the representatives of the American Public Health Association to be the conclusions of the International Conference.)

I. Endemic, Epidemic and Infectious Diseases

will probably be made as soon as the final report is received from the Secretary General of the Commission.]

I. Epidemic, Endemic and Infectious Diseases

1. Typhoid and paratyphoid fever
 - (a) Typhoid fever
 - (b) Paratyphoid fever
2. Typhus fever
3. Relapsing fever (*spirillum obermeieri*)
4. Malta fever
5. Malaria
6. Smallpox
7. Measles
8. Scarlet fever
9. Whooping cough
10. Diphtheria
11. Influenza
 - (a) with pulmonary complications specified
 - (b) without pulmonary complications specified
12. Miliary fever
13. Mumps
14. Asiatic cholera
15. Cholera nostras
16. Dysentery
 - (a) amebic
 - (b) bacillary
 - (c) unspecified or due to other causes
17. Plague
 - (a) bubonic
 - (b) pneumonic
 - (c) septicemic
 - (d) unspecified
18. Yellow fever
19. Spirochetal hemorrhagic jaundice
20. Leprosy
21. Erysipelas
22. Acute poliomyelitis
23. Lethargic encephalitis
24. Meningococcus meningitis
25. Other epidemic and endemic diseases
 - * (a) Chicken-pox
 - * (b) German measles
 - * (c) Others under this title
26. Glanders
27. Anthrax
28. Rabies
29. Tetanus
30. Mycoses
31. Tuberculosis of the respiratory system
32. Tuberculosis of the meninges and central nervous system
33. Tuberculosis of the intestines and peritoneum
34. Tuberculosis of the vertebral column
35. Tuberculosis of the joints
36. Tuberculosis of other organs
 - (a) Tuberculosis of the skin and subcutaneous cellular tissue
 - (b) Tuberculosis of the bones (vertebral column excepted)
 - (c) Tuberculosis of the lymphatic system (mesenteric and retroperitoneal glands excepted)
 - (d) Tuberculosis of the genitourinary system
 - (e) Tuberculosis of organs other than the above
37. Disseminated tuberculosis
 - (a) acute
 - (b) chronic
38. Syphilis
39. Soft chancre
40. Gonococcus infection
41. Purulent infection, septicemia
42. Other infectious diseases
1. Typhoid and paratyphoid fever.
 - (a) Typhoid fever.
 - (b) Paratyphoid fever.
2. Typhus fever.
3. Relapsing (*spirillum obermeieri*) fever.
4. Malaria.
 - (a) Malarial cachexia.
5. Smallpox.
6. Measles.
7. Scarlet fever.
8. Whooping cough.
9. Diphtheria.
10. Influenza.
 - (a) With pneumonic complications.
11. Asiatic cholera.
12. Cholera nostras.
13. Dysentery.
 - (a) Amebic.
 - (b) Bacillary.
 - (c) Unqualified or due to other protozoa.
14. Plague.
 - (a) Bubonic.
 - (b) Pneumonic.
 - (c) Septicemic.
 - (d) Unqualified.
15. Yellow fever.
16. Leprosy.
17. Erysipelas.
18. Acute poliomyelitis.
19. Encephalitis lethargica.
20. Meningococcus meningitis.
21. Purulent infection and septicemia.
 - (a) Meningococcal and pneumococcal septicemia.¹
22. Glanders.
23. Anthrax (*bacillus anthracis*).
24. Rabies.
25. Tetanus.
26. Mycoses.
27. Tuberculosis of the respiratory tract.

(Add to list of inclusions the term "Acute pulmonary tuberculosis.")
28. Tuberculosis of the genitourinary system.
29. Tuberculosis of the meninges and central nervous system.
30. Tuberculosis of intestines and peritoneum.
31. Tuberculosis of the vertebral column.
32. Tuberculosis of the joints.
33. Tuberculosis of other organs.
 - (a) Tuberculosis of the skin and subcutaneous tissue.
 - (b) Tuberculosis of the bones (except vertebral column).
 - (c) Tuberculosis of the lymphatic system (except mesenteric glands and retroperitoneal glands).
 - (d) Other tuberculosis under this title.
34. Disseminated tuberculosis.

Transfer "Acute miliary tuberculosis" to this heading from former title No. 29.)

 - (a) Acute.
 - (b) Chronic.
35. Syphilis.²
36. Gonococcus infection.
37. Other endemic, epidemic and infectious diseases.

(Include acute hemorrhagic jaundice.)

 - (a) Mumps.

II. General Diseases Not Included Above

II. General Diseases Not Included Above

43. Cancer and other malignant tumors of the buccal cavity
44. Cancer and other malignant tumors of the stomach and liver
45. Cancer and other malignant tumors of the peritoneum, intestines, and rectum
46. Cancer and other malignant tumors of the female genital organs
47. Cancer and other malignant tumors of the breast
48. Cancer and other malignant tumors of the skin
49. Cancer and other malignant tumors of other or unspecified organs
38. Cancer and other malignant tumors of the buccal cavity.
39. Cancer and other malignant tumors of the stomach, liver.
40. Cancer and other malignant tumors of the peritoneum, intestines, rectum.
41. Cancer and other malignant tumors of the female genital organs.
42. Cancer and other malignant tumors of the breast.
43. Cancer and other malignant tumors of the skin.
44. Cancer and other malignant tumors of other organs or of organs not specified.

¹Dr. Bertillon to look up minutes of meeting to determine whether or not the following are to be included: Meningococcal and pneumococcal septicemia.

²If titles Nos. 65 and 71 represent deaths due to syphilis, as modern medicine seems to have demonstrated, the total deaths due to syphilis should also include the deaths given under these title numbers.

50. Benign tumors and tumors not returned as malignant (tumors of the female genital organs excepted)
51. Acute rheumatic fever
52. Chronic rheumatism, osteoarthritis, gout
53. Scurvy
54. Pellagra
55. Beriberi
56. Rickets
57. Diabetes mellitus
58. Anemia, chlorosis
 - (a) Pernicious anemia
 - (b) Other anemias and chlorosis
59. Diseases of the pituitary gland
60. Diseases of the thyroid gland
 - (a) Exophthalmic goiter
 - (b) Other diseases of the thyroid gland
61. Diseases of the parathyroid glands
62. Diseases of the thymus gland
63. Diseases of the adrenals (Addison's disease)
64. Diseases of the spleen
65. Leukemia and Hodgkin's disease
 - (a) Leukemia
 - (b) Hodgkin's disease
66. Alcoholism (acute or chronic)
67. Chronic poisoning by mineral substances
 - * (a) Chronic lead poisoning
 - * (b) Others under this title
68. Chronic poisoning by organic substances
69. Other general diseases

III. Diseases of the Nervous System and of the Organs of Special Sense

70. Encephalitis
71. Meningitis [does not include meningitis specified as meningococcic, tuberculous, rheumatic, etc.]
 - * (a) Simple meningitis
 - * (b) Non-epidemic cerebrospinal meningitis
72. Tabes dorsalis (locomotor ataxia)
73. Other diseases of the spinal cord
74. Cerebral hemorrhage, apoplexy
 - (a) Cerebral hemorrhage
 - (b) Cerebral thrombosis and embolism
75. Paralysis without specified cause
 - (a) Hemiplegia
 - (b) Others under this title
76. General paralysis of the insane
77. Other forms of mental alienation
78. Epilepsy
79. Convulsions (non-puerperal) [5 years and over]
80. Infantile convulsions [under 5 years of age]
81. Chorea
82. Neuralgia and neuritis
83. Softening of the brain
84. Other diseases of the nervous system
85. Diseases of the eye and annexa
86. Diseases of the ear and of the mastoid process
 - * (a) Diseases of the ear
 - * (b) Diseases of the mastoid process

IV. Diseases of the Circulatory System

87. Pericarditis
88. Endocarditis and myocarditis (acute)
89. Angina pectoris
90. Other diseases of the heart
91. Diseases of the arteries
 - (a) Aneurism
 - (b) Arteriosclerosis
 - (c) Other diseases of the arteries
92. Embolism and thrombosis (not cerebral)
93. Diseases of the veins (varices, hemorrhoids, phlebitis, etc.)
94. Diseases of the lymphatic system (lymphangitis, etc.)
95. Hemorrhage without specified cause
96. Other diseases of the circulatory system

V. Diseases of the Respiratory System

97. Diseases of the nasal fossae and their annexa
 - * (a) Diseases of the nasal fossae
 - * (b) Others under this title
98. Diseases of the larynx

45. Tumors non-malignant, or not specified as malignant.³
 - (a) Tumors non-malignant.
 - (b) Tumors undetermined or not specified as malignant.
46. Acute rheumatic fever.
 - (Includes acute rheumatic arthritis.)
47. Chronic rheumatism and gout.
 - (Includes chronic arthritis, chronic rheumatic arthritis, rheumatic arthritis, and arthritis not specified, and polyarthritis non-vertebral.)
48. Scurvy.
 - (Does not include Werlhof's disease, 61.)
49. Pellagra.
50. Beriberi.
51. Rickets.
52. Diabetes mellitus.
53. Anemia, chlorosis.
 - (a) Pernicious anemia.
 - (b) Other anemias and chlorosis.
 - (Does not include kala-azar, 37.)
54. Diseases of the thyroid gland.
 - (a) Exophthalmic goiter.
 - (b) Other diseases of the thyroid.
55. Diseases of the parathyroid gland.
56. Diseases of the adrenal body.
 - (Includes Addison's disease.)
57. Diseases of the pituitary body.
58. Diseases of the spleen.
59. Diseases of the thymus gland.
60. Leukemia and Hodgkin's disease.
 - (a) Leukemia.
 - (b) Hodgkin's disease.
61. Other general diseases.
 - (This title includes general lardaceous, waxy, and amyloid degeneration of unstated organ, and also acidosis, i. e., acetonemia, cyclical vomiting.)
62. Alcoholism (acute or chronic).
 - (This title includes chronic methyl alcoholism.)
63. Chronic poisoning by mineral substances.
64. Chronic poisoning by organic substances.

III. Diseases of the Nervous System and of the Organs of Special Sense

65. Locomotor ataxia.
66. Other diseases of the spinal cord.
 - (Does not include acute poliomyelitis, 18; paralysis agitans, 77; disseminated sclerosis, 77.)
67. Encephalitis.
68. Acute meningitis.
69. Cerebral hemorrhage, embolism and thrombosis.
 - (a) Cerebral hemorrhage.
 - (b) Cerebral embolism and thrombosis.
 - (c) Hemiplegia.⁴
 - (Deaths of infants under one month from these causes are assigned to injuries at birth.)
70. Other paralysis without specified cause.
71. General paralysis of the insane.
 - (Does not include alcoholic paralysis.)
72. Other forms of mental alienation.
73. Epilepsy.
74. Convulsions.
75. Chorea.
 - (Does not include chorea gravidarum, senile, hereditary or Huntington's chorea.)
76. Neuritis.
77. Other diseases of the nervous system.
 - (Includes neuralgia and softening of the brain.)
 - (a) Softening of the brain.
 - (b) Other diseases under this title.
78. Diseases of the eye and their annexa.
79. Diseases of the ears.
 - (This includes all diseases of the mastoid process.)

³Non-malignant tumors occurring in all regions of the body from all other titles transferred to this title, except cerebral 77, uterine 128, and ovarian 129.

⁴Dr. Bertillon to look up minutes of meetings to determine whether hemiplegia is to be a subdivision of 69 or included under 70.

99. Bronchitis
 - (a) acute
 - (b) chronic
 - (c) not otherwise defined under 5 years of age
 - (d) not otherwise defined 5 years and over
100. Bronchopneumonia (including capillary bronchitis)
 - * (a) Bronchopneumonia
 - * (b) Capillary bronchitis
101. Pneumonia
 - (a) lobar
 - (b) not otherwise defined
102. Pleurisy
103. Congestion and hemorrhagic infarct of the lung
104. Gangrene of the lung
105. Asthma
106. Pulmonary emphysema
107. Other diseases of the respiratory system (tuberculosis excepted)
 - (a) Chronic interstitial pneumonia, including occupational diseases of the lung
 - (b) Diseases of the mediastinum
 - (c) Others under this title

VI. Diseases of the Digestive System

108. Diseases of the mouth and annexa
109. Diseases of the pharynx and tonsils (including adenoid vegetations)
 - * (a) Adenoid vegetations
 - * (b) Others under this title
110. Diseases of the esophagus
111. Ulcer of the stomach and duodenum
 - (a) Ulcer of the stomach
 - (b) Ulcer of the duodenum
112. Other diseases of the stomach (cancer excepted)
113. Diarrhea and enteritis (under 2 years of age)
114. Diarrhea and enteritis (2 years and over)
115. Ankylostomiasis
116. Diseases due to other intestinal parasites
 - (a) Cestodes (hydatids of the liver excepted)
 - (b) Trematodes
 - (c) Nematodes (other than ankylostoma)
 - (d) Coccidia
 - (e) Other parasites specified
 - (f) Parasites not specified
117. Appendicitis and typhlitis
118. Hernia, intestinal obstruction
 - (a) Hernia
 - (b) Intestinal obstruction
119. Other diseases of the intestines
120. Acute yellow atrophy of the liver
121. Hydatid tumor of the liver
122. Cirrhosis of the liver
 - (a) specified as alcoholic
 - (b) not specified as alcoholic
123. Biliary calculi
124. Other diseases of the liver
125. Diseases of the pancreas
126. Peritonitis without specified cause
127. Other diseases of the digestive system (cancer and tuberculosis excepted)

VII. Non-Venereal Diseases of the Genitourinary System and Annexa

128. Acute nephritis (including unspecified under 10 years of age)
129. Chronic nephritis (including unspecified 10 years and over)
130. Chyluria
131. Other diseases of the kidneys and annexa (diseases of the kidneys in pregnancy excepted)
132. Calculi of the urinary passages
133. Diseases of the bladder
134. Diseases of the urethra, urinary abscess, etc.
 - (a) Stricture of the urethra
 - (b) Others under this title
135. Diseases of the prostate
136. Non-venereal diseases of the male genital organs
137. Cysts and other benign tumors of the ovary
138. Salpingitis and pelvic abscess
139. Benign tumors of the uterus
140. Non-puerperal uterine hemorrhage

IV. Diseases of the Circulatory System

80. Pericarditis.
81. Acute endocarditis and myocarditis.
 - (a) Acute endocarditis.
 - (b) Acute myocarditis.
 (Note: Endocarditis and myocarditis unqualified under 45 years of age are included in this title.)
82. Angina pectoris.
83. Other diseases of the heart.⁵
 - (a) Diseases of the myocardium.
 - (b) Diseases of the valves of the heart.
 - (c) Other diseases under this title.
 (Note: Endocarditis and myocarditis unqualified 45 years and over are included under this title.)
 (Note: This includes functional disorders of the heart, except heart paralysis or heart failure.)
84. Diseases of the arteries, atheroma, aneurism, etc.
 - (a) Aneurism.
 - (b) Other diseases of the arteries.
85. Embolism and thrombosis (not cerebral).
 (Cerebral embolism and cerebral thrombosis transferred to 69.)
86. Diseases of veins (varices, hemorrhoids, phlebitis, etc.)
87. Diseases of the lymphatic vessels and glands.
88. Hemorrhage (without cause determined) and other diseases of the circulatory system.
 (Functional diseases of the heart are transferred to 83.)

V. Diseases of the Respiratory System

89. Diseases of the nasal fossae.
 (Note: This includes diseases of the accessory sinuses.)
90. Diseases of the larynx.
91. Bronchitis.
 - (a) Acute (except acute capillary bronchitis, 92).
 - (b) Chronic.
 - (c) Unqualified (under 5 years).
 - (d) Unqualified (5 years and over).
92. Bronchopneumonia.
 (This includes acute capillary bronchitis.)
 (This includes inspiration pneumonia not due to presence of foreign body, and pneumococcal bronchopneumonia.)
93. Pneumonia.
 - (a) Lobar.
 - (b) Not specified.
94. Pleurisy.
95. Pulmonary congestion and hemorrhage.
96. Gangrene of the lung.
97. Asthma.
 (Note: This title includes hay fever.)⁶
98. Pulmonary emphysema.
99. Other diseases of the respiratory system.
 - (a) Chronic interstitial pneumonia, including occupational diseases of the respiratory tract.
 - (b) Diseases of the mediastinum.
 - (c) Other diseases under this title.
 (This title includes spirochetal bronchitis. Does not include pulmonary hemorrhage, 95.)

VI. Diseases of the Digestive System

100. Diseases of the mouth and annexa.
101. Diseases of the pharynx and tonsils.
 (Note: This includes adenoid disease.)
102. Diseases of the esophagus.
 (Not include foreign body in the esophagus, 180.)
103. Ulcer of the stomach and duodenum.
 - (a) Ulcer of the stomach.
 - (b) Ulcer of the duodenum.

⁵Dr. Bertillon to look up minutes of meeting to determine whether these subdivisions of 83 are optional.

⁶Dr. Bertillon to look up minutes of meeting to determine whether hay fever is to be included under 97.

- 141. Other diseases of the female genital organs
- 142. Non-puerperal diseases of the breast (cancer excepted)

VIII. The Puerperal State

- 143. Accidents of pregnancy
 - (a) Abortion
 - (b) Ectopic gestation
 - (c) Others under this title
- 144. Puerperal hemorrhage
- 145. Other accidents of labor
 - *(a) Cesarean section
 - *(b) Other surgical operations and instrumental delivery
 - *(c) Others under this title
- 146. Puerperal septicemia
- 147. Puerperal phlegmasia alba dolens, embolus, sudden death
- 148. Puerperal albuminuria and convulsions
- 149. Following childbirth (not otherwise defined)
- 150. Puerperal diseases of the breast

IX. Diseases of the Skin and of the Cellular Tissue

- 151. Gangrene
- 152. Furuncle
- 153. Acute abscess
- 154. Other diseases of the skin and annexe

X. Diseases of the Bones and of the Organs of Locomotion

- 155. Diseases of the bones (tuberculosis excepted)
- 156. Diseases of the joints (tuberculosis and rheumatism excepted)
- 157. Amputations
- 158. Other diseases of the organs of locomotion

XI. Malformations

- 159. Congenital malformations (stillbirths not included)
 - *(a) Hydrocephalus
 - *(b) Congenital malformations of the heart
 - *(c) Others under this title

XII. Early Infancy

- 160. Congenital debility, icterus, and sclerema
- 161. Premature birth; Injury at birth
 - *(a) Premature birth
 - *(b) Injury at birth
- 162. Other diseases peculiar to early infancy
- 163. Lack of care

XIII. Old Age

- 164. Senility

XIV. External Causes

- 165. Suicide by solid or liquid poisons (corrosive substances excepted)
- 166. Suicide by corrosive substances
- 167. Suicide by poisonous gas
- 168. Suicide by hanging or strangulation
- 169. Suicide by drowning
- 170. Suicide by firearms
- 171. Suicide by cutting or piercing instruments
- 172. Suicide by jumping from high places
- 173. Suicide by crushing
- 174. Other suicides
- 175. Poisoning by food
- 176. Poisoning by venomous animals
- 177. Other acute accidental poisonings (gas excepted)
- 178. Conflagration
- 179. Accidental burns (conflagration excepted)
- 180. Accidental mechanical suffocation
- 181. Accidental absorption of irrespirable or poisonous gas
- 182. Accidental drowning
- 183. Accidental traumatism by firearms (wounds of war excepted)
- 184. Accidental traumatism by cutting or piercing instruments
- 185. Accidental traumatism by fall

- 104. Other diseases of the stomach (cancer excepted).
- 105. Diarrhea and enteritis (under two years).
- 106. Diarrhea and enteritis (two years and over). (Not include duodenal ulcer, 103.)
- 107. Ankylostomiasis.
- 108. Other diseases due to intestinal parasites.
 - (a) Infection by cestoda.
 - (b) Infection by trematoda.
 - (c) Infection by nematoda.
 - (d) Infection by coccidia.
 (List in Dr. Bertillon's hands.)
- 109. Appendicitis and typhilitis.
- 110. Hernia, intestinal obstruction.
 - (a) Hernia.
 - (b) Intestinal obstruction.
 (Not include congenital umbilical hernia, 146.)
- 111. Other diseases of the intestines.
- 112. Acute yellow atrophy of liver. (This does not include Weil's disease, 37.)
- 113. Cirrhosis of the liver.
 - (a) Alcoholic cirrhosis of the liver.
 - (b) Cirrhosis of the liver not specified as alcoholic.
- 114. Biliary calculi.
- 115. Other diseases of the liver.
- 116. Diseases of the pancreas.
- 117. Peritonitis (non-puerperal and of unstated origin) and other diseases of the digestive system. (Note: This includes subphrenic abscess and polyserositis.)

VII. Non-venereal Diseases of the Genitourinary System and Annexe

- 118. Acute nephritis. (Note: Nephritis unqualified under 10 years of age to be included here.)
- 119. Chronic nephritis. (Note: Nephritis unqualified, 10 years and over, included here.)
- 120. Chyluria.
- 121. Other diseases of the kidneys and annexe. (Not include pyelonephritis of pregnancy.)
- 122. Calculi of the urinary passages.
- 123. Diseases of the bladder.
 - (a) Cystitis.
 - (b) Other diseases of the bladder.
- 124. Diseases of the urethra, urinary abscess, etc.
 - (a) Stricture.
 - (b) Other diseases under this title. (Not include foreign body, 180.)
- 125. Diseases of the prostate.
- 126. Non-venereal diseases of the male genital organs.
- 127. Salpingitis and pelvic abscess.
- 128. Uterine tumors (non-cancerous).
- 129. Cysts and other non-malignant tumors of the ovary.
- 130. Other diseases of the female genital organs.
- 131. Non-puerperal diseases of the breast (cancer excepted).

VIII. The Puerperal State

- 132. Accidents of pregnancy.
 - (a) Abortion.
 - (b) Ectopic gestation.
 - (c) Other accidents of pregnancy.
 - 133. Puerperal hemorrhage.
 - 134. Other accidents of labor.
 - 135. Puerperal sepsis. (Includes phlegmasia alba dolens and septic embolus.)
 - 136. Puerperal albuminuria and convulsions.
 - 137. Sudden death following childbirth. (Not otherwise defined.)
 - 138. Puerperal diseases of the breast.
- IX. Diseases of the Skin and Cellular Tissue*
- 139. Gangrene.
 - 140. Furuncle.
 - 141. Acute abscess.
 - 142. Other diseases of the skin and annexe.

X. Diseases of the Bones and of the Organs of Locomotion

- 143. Disease of the bones (tuberculosis excepted). (Including osteomalacia, softening of the bones, scoliosis kyphosis, lordosis.) (Excluding diseases of the mastoid and diseases of the accessory sinuses.)

186. Accidental traumatism in mines and quarries
 - * (a) Mines
 - * (b) Quarries
187. Accidental traumatism by machines
188. Accidental traumatism by other crushing (vehicles, railways, landslides, etc.)
 - * (a) Railroad accidents
 - * (b) Street car accidents
 - * (c) Automobile accidents
 - * (d) Aeroplane and balloon accidents
 - * (e) Injuries by other vehicles
 - * (f) Landslide, other crushing
189. Injuries by animals (not poisoning)
190. Wounds of war
191. Execution of civilians by belligerent armies
192. Starvation (deprivation of food or water)
193. Excessive cold
194. Excessive heat
195. Lightning
196. Other accidental electric shocks
197. Homicide by firearms
198. Homicide by cutting or piercing instruments
199. Homicide by other means
200. Infanticide (murder of infants less than one year of age)†
201. Fracture (cause not specified)
202. Other external violence (cause specified)
203. Other external violence (cause not specified)

XV. Ill-Defined Diseases

204. Sudden death
205. Cause of death not specified or ill-defined
 - * (a) Ill-defined
 - * (b) Not specified or unknown

†This title to be omitted when homicides are shown by ages under Titles 197-199.

Typhoid Fever—A Vanishing Disease.—

During the past two years there has been a remarkable diminution in the death rate from typhoid fever. In 1920, the 68 cities in the United States having a population of at least 100,000 each, and a total population of 27,300,000, had a death rate from typhoid fever equivalent to 3.7 deaths per 100,000 of population. In view of the fact that it is less than a score of years that many cities and states had typhoid death rates as high as 50 per 100,000 of population, this diminution is remarkable. The following table illustrates the enormous saving of human life through prevention of typhoid fever:

Deaths from Typhoid Fever per 100,000

City	1906-1910	1920
New York	13.5	2.4
Chicago	15.8	1.1
Philadelphia	41.7	3.3
Detroit	21.1	5.1
Cleveland	15.7	3.2
Boston	16.0	1.5
St. Louis	14.7	2.7
Los Angeles	19.0	2.6
Baltimore	35.1	4.7
San Francisco	27.3	3.1
Pittsburgh	65.0	2.7
Buffalo	22.8	5.1

The diminution of typhoid fever is due

144. Diseases of the joints (tuberculosis and chronic arthritis excepted.)
(Including hypertrophic osteoarthropathy.)
145. Other diseases of the organs of locomotion, amputations.
(Including myopathies.)

XI. Malformations

146. Congenital malformations.

XII. Early Infancy

147. Congenital debility, icterus and sclerema.
(Note: This title applies only to deaths under one year.)
148. Other causes peculiar to early infancy.
 - (a) Injuries at birth.
 - (b) Other conditions included under this title.
149. Lack of care.

XIII. Old Age

150. Senility.

XIV. External Causes

151. Suicide by ingestion of poisonous solids and liquids.
152. Suicide by inhalation of poisonous gases.
153. Suicide by hanging or strangulation.
154. Suicide by drowning.
155. Suicide by firearms.
156. Suicide by cutting or piercing instruments.
157. Suicide by jumping from high places.
158. Suicide by crushing.
159. Other suicides.
160. Homicides.
 - (a) Infanticide (under one year).
 - (b) Other homicides.
161. Poisoning by food.
 - (a) Botulism.
 - (b) Other food poisonings.
162. Other acute accidental poisonings.
(Poisonings by gas excepted.)
(This includes acute methyl alcohol poisoning.)
163. Conflagration.
164. Accidental burns (conflagration excepted).
165. Suffocation.
 - (a) Suffocation by want of air.
 - (b) Suffocation by accidental inhalation of poisonous gases.
166. Accidental drowning.
167. Traumatism by firearms (not in war).
168. Traumatism by cutting and piercing instruments (not in war).
169. Traumatism by fall.
170. Traumatism in mines and quarries.
 - (a) Mines.
 - (b) Quarries.
171. Traumatism by machines.
172. Traumatism by other crushing.
173. Injuries by animals.
174. Starvation, deprivation of food and water.
175. Excessive cold.
176. Effects of heat.
177. Lightning.
178. Electricity (lightning excepted).
179. Fractures (cause not specified).
180. Other external violence.
 - (a) Injuries in battle.
 - (b) Other conditions included under this title.

XV. Ill-defined Diseases

181. Sudden death.
182. Causes of death not specified or ill-defined.
 - (a) No diseases (for morbidity).

to the improvement in water and milk supplies, better municipal sanitation, and typhoid vaccination.—*Statistical Bulletin*, Metropolitan Life Insurance Company, April, 1921. (M. P. H.)

THE NEED FOR SPECIAL HEALTH PROTECTION OF EMPLOYED ADOLESCENTS

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THE child-hygiene activities that have been such a popular phase of public health during recent years have given very little consideration to the child of adolescent age. Some health work has been done in high schools, little or none in the continuation schools. It is estimated that at 16 years of age about three fourths of the population of that age group have left school for employment, and at 14 and 15 years of age, from one fifth to one half have left school with an increasing proportion as they approach their sixteenth birthday. Such health protection as these adolescents have, has largely been of a negative character. It has been promoted as a part of the child-labor movement and has been generally directed toward prohibitory legislation or a requirement of physical fitness for entrance into employment. With the development of compulsory continuation schools we have an excellent opportunity to inaugurate a constructive health service for these young people. Such service would aid young industrial or mercantile workers to make the right kind of a start in their careers; and would at the same time offer an opportunity for us to study industry and other forms of employment in their direct relation to the health of the adolescent worker. There is a great need for such studies to guide us in properly safeguarding the health of adolescent workers and in the prevention of possible injuries resulting from too early employment. We have very little definite knowledge at the present time as to the physical effects of industry upon adolescents, although we have some reason to believe that this group should have special health protection.

WORK PERMIT AGE AS A CRISIS

There is considerable evidence to indi-

cate that adolescence represents a true crisis in the lives of most people. Some emerge from this period stronger than before, while others break down under the crucial changes that take place in both the physiological and psychological processes. Exacerbations of pulmonary tuberculosis infections begin to occur at this period; chlorosis among girls is most common at this age, and such conditions as toxic goiter, the cropping out of suicidal tendencies, and the nervous breakdown that culminates in dementia praecox make their appearance during this period. Every public-health worker realizes that nowhere have our school or other child-health activities been sufficiently perfected to provide the medical and educational service necessary in order that every child may have full benefit of our present knowledge of hygiene and medical science. As a result many children pass through their short school careers without the correction of the most obvious physical defects; many more fail to acquire the simplest habits of personal hygiene that are necessary to maintain health. Oftentimes these children have been attacked during childhood by one disease after another. They often attain adolescence in a weakened and undernourished condition and without the reserve energy necessary to meet the new duties thrown upon them. This condition of limited energy may present a dangerous hazard when met by the extensive bodily changes and the mental and moral struggles which accompany adolescence. If we add to this crisis over-exertion, the fatigue of close application to monotonous tasks in industry, or the worry of unaccustomed economic responsibilities, we are likely to find a collapse which leads to physical incompetence and economic dependence.

Of course the larger proportion of children survive this crisis, but many probably survive with definite handicaps. These handicaps to good health lead to sickness in many cases, and our charity organizations have reported that sickness is to blame for a large proportion of the calls upon charity.

Many observations have been made of the rate of growth and development of children, and the majority show marked acceleration of growth in height, weight, and depth and girth of chest at this age period. This acceleration of growth probably adds to the physical burden. Height and weight may both be accelerated at the same time during this period—a condition which rarely prevails at other times during childhood. The trunk of the body grows most rapidly at this period. The fact that growth makes special demands upon the energy of the child is suggested by the figures of Tigerstedt and Sonden* who measured the carbon dioxide output as follows:—

TABLE 1

Mean age in years—Males	Carbon dioxide	Carbon dioxide
	per hour per kg. of weight	per hour and per square meter of bodily surface
	(Grams)	(Grams)
7.86	1.149	26.27
9.59	1.207	29.86
10.53	1.106	28.22
11.39	1.063	27.54
14.54 .....	.960	26.65
19.51 .....	.718	21.51
25 .....	.569	18.48

Likewise the food requirements are greater per unit of bodily weight or surface as shown by Cammerer:—

TABLE 2

Age in years—Males	Calories per kg. of weight in 24 hours	Calories per square meter of bodily surface in 24 hours
5-6	76.7	1,680
7-10	61.7	1,440
11-14	47.7	1,250
15-16	39.8	1,220
17-18	37.7	1,200
Adults	32.0	1,071

The increased metabolism thus indicated probably denotes to a degree the relative cost in energy for both growth and loss of heat. Growth is expensive.

Accelerated growth and physiologic changes with their heavy demands upon the vitality of the adolescent child are further shown by studies of the heart and blood vessels. Landois, Benecke, and others report observations indicating that during early life the blood vessels are large and the heart relatively small, but with the development of puberty the heart undergoes a rapid growth so that the heart's capacity is relatively much increased over the arterial lumen with a resulting increase of blood pressure. Professor G. Stanley Hall reports that along with this increased arterial tension, according to the best estimates, there is an increased temperature at puberty of about one half of one degree F. Hall also reports that "lungs and chest share to a marked degree in the augmented development of adolescence. This is true, whether inferred from girths of the chest expanded or contracted (which do not consider the movements of the diaphragm, which have not been measured), or by determining the weight of the lungs from the cadaver at different ages, or by recording the maximum amount of air that can be expelled into a spirometer."

Hall presents in his work on *Adolescence* a tremendous mass of evidence to show that this age period, or that immediately following pubescence, is marked by an outburst of growth of motor power and function. He shows by Quetelet's and other tables of the back lift by men and women that the gain in strength is most rapid at 16 and 17 years, while Hitchcock's averages for four thousand Amherst students showed the greatest gain at 17 and 18 years. He says: "The strength of the upper arms in

*See reference to Teleky, "Age Problems in Industrial Hygiene."

the biceps region is remarkably augmented. According to Moon, at 16 it is nearly fivefold what it is at 11, and nearly double from 15 to 16, increasing but very little from 13 to 14. . . . Erismann sums up by saying that in general the most rapid development of physical power occurs between the ages of 15 and 19." Hall's evidence of the power of adolescents to resist fatigue is not very satisfactory, although the ergograph and other experiments suggest a marked increment from 14 to 18 years. If the growth in motor function occurs most rapidly immediately following pubescence, we might suppose that children in the temperate zones during the work permit ages of 14 and 15 years are unprepared to meet the demands upon motor power that would be well within their powers at a period two or three years later. However, in the absence of further data, the actual effect of unsuitable requirements of motor function upon both motor and bodily development as well as upon health during pre-pubescence and pubescence must remain an open question. Suffice it to say it is not advisable to plough with the colt.

With such limited morbidity statistics as we have, we do not find an increase of sickness corresponding altogether to the great physiological changes of puberty. In fact the data of Key, Schmid-Monnard, and a Danish commission indicate that the morbidity curve of school-children generally rises until 13 or 14 and then sinks until about the 17th or 18th year. The American mortality figures show some increase after the 14th year and a marked rise after the 17th year. If we may rely upon these morbidity figures, we may suspect there is a compensatory immunity from sickness at this crucial period, and the mortality effect occurs in the post-pubescent years.

However, we cannot draw conclusions with precision from this limited morbidity data.

It seems safe to assume from our present knowledge that the age period in which from 20 to 75 per cent of our children leave school to go to work is characterized by such tremendous changes in physiology and morphology as to make very special demands upon the vitality of the child. If we consider further the evidence in regard to the psychological changes which G. Stanley Hall has so extensively studied, we cannot fail to be impressed that this period is indeed a crisis even under the best conditions. Such a crisis calls for protection from strain and any hazards likely to influence health and normal physical development. This being true we should expect to find some evidence of deleterious effects resulting from a lack of such protection.

WORKING CHILDREN COMPARED WITH NON-WORKERS

Schmid-Monnard investigated the frequency of chronic illness in high schools with and without afternoon sessions and noted a marked contrast in the percentage of sickly persons in these schools with the extra work required:—

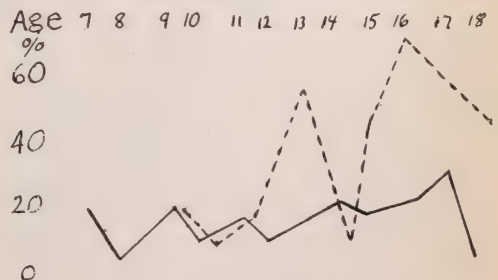


FIGURE 1

Per cent of sickly Persons (Schmid-Monnard)
 ————— High schools and academies
 not having afternoon sessions.
 High schools having afternoon sessions.

Dr. Ludwig Teleky, of Vienna, who before the war had charge of an office where medical advice was given in connection with vocational guidance, reports the sickness insurance funds as evidence that the morbidity of young workers is extremely high, and notes that "the frequency of sickness is greatest not at the age of 14 immediately upon entrance into industry, but apparently only at the time when all the injurious influences of the

occupation have been effective for some time." (*Rosenfeld Statistische Monats-schrift*, 1905.)

TABLE 3

NUMBER OF PERSONS TEMPORARILY INCAPACITATED FOR EVERY 100 AVERAGE MEMBERS OF THE VIENNA INSURANCE FUNDS (MOSTLY FOR 1892-1902)

Ages in years	Sick persons		Cases of sickness	
	Male	Female	Male	Female
14 ...	37.61	22.92	43.82	26.99
15 ...	62.94	41.52	81.50	49.13
16 ...	58.78	40.28	75.81	45.88
17 ...	43.28	39.06	54.51	48.45
18 ...	37.46	38.22	46.40	47.68
24 ...	35.54	36.28	34.72	40.12

TABLE 3-A

Age in years	Percentage of sick persons				Percentage of cases of sickness			
	District Funds	General workers' funds	Trade funds	Establishment funds	District funds	General workers' funds	Trade funds	Establishment funds
Under 15	161.11	34.27	37.75	...	189.26	45.93	46.17	...
16-20	50.18	42.12	31.35	17.80	58.39	57.35	38.76	20.91
21-25	28.89	39.16	26.15	16.81	34.74	53.40	33.10	20.40

He refers to Kaup's report of similar experiences in the German Sickness Insurance Funds, and also to the declining death-rate from tuberculosis in the other age groups, except for a stationary rate for young men 15 to 20 years old in Berlin as reported by Kayserling. He quotes von Pirquet as explaining the marked rise in the tuberculosis death-rate that occurs between the 15th and 20th years as due to participation in gainful occupations, overwork, and bad food.

This data may be taken as added evidence of the importance of this age period from the standpoint of health. We may not conclude finally that the high rate of sickness among these young workers is the direct result of employment. If it is, we must consider that the figures represent morbidity among children who are permitted by law to work an eleven-hour day, and we have no information as to how many of the children worked this maximum period. At any rate, these children were particularly in need of health protection.

A relationship between the industrial employment of adolescents and the tuberculosis problem is suggested by the results of a study of death-rates among cotton-mill workers in Massachusetts by

the United States Bureau of Labor Statistics. These statistics appear somewhat more important when we consider that the 1910 census report showed 41,000 child operatives in cotton mills of the United States, and that industrial studies show that some of the conditions prevailing in cotton mills, and which probably contribute to the high death-rate among the workers, are found, to a greater or less degree, in many of the other industries.

TABLE 4

TUBERCULOSIS DEATH-RATE PER 100,000 POPULATION

Sex and age	Years (inclusive)	Operatives	Non-operatives
Boys 15 to 19.....	1905 to 1907.....	160.....	93
Boys 15 to 19.....	1908 to 1912.....	110.....	73
Girls 15 to 19.....	1905 to 1907.....	223.....	110
Girls 15 to 19.....	1908 to 1912.....	223.....	118

Among males, this excess of operative deaths is peculiarly significant, because in Fall River, where this study was made, nearly all males are wage-earners, and the relatively few who are not are almost all engaged in industrial pursuits. Within certain broad limits, therefore, their economic level is more nearly the same, and comparisons between those working in the cotton mills, as compared with those outside of the cotton mills, at least indicate that cotton-mill conditions

are conducive to death from tuberculosis, even if these conditions do not actually cause the death.

Among females, the operative excess in tuberculosis hazard is as constant as among males and considerably larger. In the age group 15 to 19, the operative excess amounted to eighty-nine per cent. These conditions, for the most part, prevail throughout the various race classifications.

The hazard of the younger female operatives from eclampsia was very marked. This very serious disease of pregnancy, prevailing among the younger married operatives, suggests strongly that early employment in the industry may be an important factor detrimental to the health of these young women. In the age group 15 to 19 years, which is nearest the wage-earner beginner period, the general death-rate of operative females was thirty-three per cent higher than that of the non-operative females. These high death-rates among the women in this industry cannot of course be taken as an indication of the effect of

industry upon all adolescent girls, but it does point strongly to the need for special health service for this age group.

In the printing trades we likewise find a higher death-rate among the young workers than in the general population for the same ages. Hoffman's figures from England and Wales show a death-rate for printers of 3.19 per 1000 for ages 15 to 19 years as against 2.44 per 1000 for all occupied males. DeVooys gives the tuberculosis death-rates, 1896 to 1900, from Holland, for the ages 12 to 17 years as 118 per 100,000 for printers, while all occupied males had at those ages a rate of 54. For the age group 18 to 22 years, it was 625 per 100,000 for printers and 239 for all occupied males. For the next age period, from 23 to 35 years, when the highest rate is found for all occupied males, the ratio among the printers is not so high as among the younger workers, e. g., 453 per 100,000 for printers and 248 for all occupied males. The tuberculosis figures for England and Wales are similar:—

TABLE 5

MORTALITY FROM CONSUMPTION AND FROM OTHER DISEASES OF THE RESPIRATORY SYSTEM AMONG PRINTERS COMPARED WITH THAT OF ALL OCCUPIED MALES IN ENGLAND AND WALES, 1900 TO 1902, BY AGE GROUPS.

(Source: The Mortality from Consumption in Dusty Trades, by Frederick L. Hoffman, in Bulletin No. 79, U. S. Bureau of Labor Statistics, compiled from data in Supplement to Sixty-fifth Annual Report of Registrar General of Births, Deaths and Marriages in England and Wales, Part II, London, 1908.)

Age at Death	Mortality from consumption				Mortality from other diseases of the respiratory system			
	Death-rate per 1,000 for all occupied males	Death-rate for printers			Death-rate per 1,000 for all occupied males	Death-rate for printers		
		Rate per 1,000	Greater (+) or less (—) than rate for all occupied males	Ratio to rate for all occupied males		Rate per 1,000	Greater (+) or less (—) than rate for all occupied males	Ratio to rate for all occupied males
15 to 19.....	0.54	1.03	+0.49	191	0.24	0.86	+0.12	150
20 to 24.....	1.55	3.41	+1.86	220	.48	.37	— .11	77
25 to 34.....	2.03	3.65	+1.62	180	.77	.55	— .22	71
35 to 44.....	2.74	4.85	+2.11	177	1.66	1.24	— .42	75

We note that the tuberculosis death-rate among the printers at the ages immediately following adolescence is markedly greater than among the general male population, and that this high ratio to the rate for all occupied males is

higher at this age period than at any subsequent period except for the immediately succeeding period from 20 to 24 years, when the highest rate of all occurs among the printers. This phenomenon would seem to indicate there is a peculiar

susceptibility of printers at these early age periods that is not so marked for all other occupations combined.

If we accept Hayhurst's statistics of the ages of Ohio printers as typical of this country, we may claim that there is a relatively small proportion who are under 20 years of age.

TABLE 6
PER CENT OF PRINTERS IN EACH AGE GROUP IN OHIO
AND IN HOLLAND

Ohio		Holland	
Age Group	Per cent at each age	Age Group	Per cent at each age
Under 20.....	4.2	12 to 17.....	26.71
20 to 40.....	82.7	18 to 22.....	19.72
		23 to 35.....	30.14

However, we should consider that the 4.2 per cent should have full health protection and this has not yet been done in this country. Although the International Typographical Union has formulated rules as to apprenticeship, important features are left to be dealt with by local unions, so that in many cases immature youths are permitted to undertake unhealthy processes. Dr. Alice Hamilton, in the report for the United States Department of Labor on the "Hygiene of the Printing Trades" (1917) states: "The boys in American printing shops are not protected at all from the dangers incidental to or inherent in the trade."

FURTHER DEVELOPMENT OF THE PROBLEM

Such evidence as we have assembled suggests the need of special health protection for adolescents entering employment. As a recognition of this need we have eighteen states with laws requiring that a physician shall make a physical examination of each child entering em-

ployment between 14 and 16 years of age. Ten other states recognize the need of health protection but do not specify that a physician must examine the child in all cases. The United States Children's Bureau, with the help of a special committee appointed for the purpose, has drawn up definite standards for such examinations.

A logical next step in this problem should be a test of the efficiency of the single examination as a method of health protection. The Children's Bureau committee has recommended periodical examinations of these children after entrance into employment. The need for such reexaminations could be tested by examinations of children in the continuation schools. A sufficient number of such reexaminations with proper recording of the occupation and the period of employment might be expected to give us data as to the relation of various kinds of employment to the health of the young worker.

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Watch for the Jubilee Historical Volume and the next issues of the JOURNAL. Important Annual-meeting papers are coming.

SMALLPOX INCIDENCE AND MEASURES OF CONTROL IN AMERICAN AND CANADIAN CITIES 1919 AND 1920

(A report of an inquiry conducted by the Metropolitan Life Insurance Company)

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I. SMALLPOX DATA FOR CITIES

1. *Smallpox incidence in American and Canadian Cities, 1919 and 1920*

THE increasing prevalence of smallpox in the United States and Canada led the Company early in 1921 to make an inquiry into the incidence rate of the disease in the principal cities. A questionnaire was sent to a large number of municipal health officers covering the number of cases and deaths which occurred in 1919 and 1920. Information was asked for also on the measures pursued by health departments in the prevention and control of the disease. Replies were received from the health officers of 243 cities in the United States and Canada. In 1921, or 63.4 per cent of these cities, a total of 19,104 cases of smallpox were reported in 1920. In 1919, 140 of the cities, or 57.6 per cent, reported 14,335 cases of smallpox.

Since the information was requested of all municipal health officers, without any particular fore-knowledge of the presence or absence of smallpox in any of the municipalities, our data should give a fairly representative indication of the prevalence of the disease in recent years, of the kind of municipal control, of the attitude of the public toward vaccination and of other factors which play a part in the campaign against smallpox.

The highest smallpox incidence rates occurred in cities of the Rocky Mountain, West North Central, and Pacific Coast group of states and in Canada. A fairly high prevalence rate was reported also for cities of the West South Central states (Arkansas and Louisiana). The least incidence rates occurred in the New England, Middle Atlantic, and South At-

lantic states. These areas also included most of the cities not reporting smallpox at all in 1920.

Considering the cities according to individual states, the highest rates per 100,000 of population were observed in the cities located in the states of Washington, Minnesota, Nebraska, Colorado, Wisconsin, Montana, Iowa, and Louisiana, in order of decreasing incidence.

2. *Mortality from Smallpox*

In all of the cities of the United States and Canada reporting, there were 181 deaths from smallpox, or at a rate of one per 100,000 population. In the cities of Mississippi and Louisiana a considerable death-rate was reported. The 8 deaths in a city population of 35,000 in Mississippi produced a death-rate of 23 per 100,000. In the Louisiana cities comprising a population of about 400,000, the 134 deaths occurred at a rate of 34 per 100,000. This is the highest rate recorded for any municipal group in that year. Most of this mortality came from the city of New Orleans.

3. *The Case Fatality Rate*

The fatality rate of smallpox in the northern, eastern and western sections of the country was extremely low during 1920. In the state of Louisiana, however, among 891 cases, 134 deaths were reported, a case-fatality rate of 15 per cent. For 20 cases reported in the cities of Mississippi, there were 8 deaths, or a case-fatality rate of 40 per cent. It would seem, therefore, that smallpox is present in virulent form in these Southern areas. The prevalence of this type

of smallpox in the far South is really dangerous to other sections of the country because of the easy facilities for dissemination of the infection throughout the United States and Canada. A communicable disease which causes one death for every 7 or 8 cases is by no means to be regarded lightly, however restricted the area of its prevalence may be.

4. *The Increased Prevalence of Smallpox*

It may be worth while to consider, for a moment, the increase in smallpox prevalence during 1920 for the several geographical divisions of the United States and Canada.

The Canadian cities showed an increase in case incidence from 150 to 165 per 100,000 of population between 1919 and 1920. In Edmonton, the figure increased from 30 in 1919 to 436 per 100,000 in 1920; in Ottawa, from 37 to 666; in Brantford, from 77 to 257 per 100,000. The Toronto record showed a slight decline from 381 to 240 per 100,000. In the latter city 1,175 cases were reported in the calendar year 1920.

For all of the cities in the United States, there was an increase from 42 in 1919 to 58 per 100,000 of population in 1920. Cities in the East North Central states registered an increase from 48 to 70 per 100,000 of population; in the West North Central states, from 125 to 238 per 100,000; in the cities of the East South Central states, from 38 to 112; in the West South Central states, from 30 to 185. The cities of the Mountain states showed an increase from 206 to 340; and the Pacific Coast cities, from 94 to 222. In cities of the South Atlantic states the case-incidence rate declined from 184 in 1919 to 37 per 100,000 in 1920. The New England and Middle Atlantic states, with a small number of cases in each year, showed slight increases in the incidence rate.

Considering in greater detail the cities of each geographical division we find in the East North Central group a rise from 11 to 203 per 100,000 in Akron, O.; an increase from 59 to 280 for Canton, O.; an increase from 307 to 335 for Youngstown. In Indiana, Indianapolis recorded an increase from 44 in 1919 to 111 in 1920. The Illinois cities showed an increase from 11 to 18 per 100,000; the city of Rock Island, with 173 cases in a population of 35,000 in 1920, registered an increase in the rate from 404 in 1919 to 492 per 100,000. The Chicago rate increased from 4 to 6 per 100,000 in the two years. In Michigan, the chief increase was recorded for Detroit, from 25 in 1919 to 113 per 100,000 in 1920. In Wisconsin, the city of Milwaukee reported an increase from 73 to 124 per 100,000. The Minnesota cities, in the West North Central group, registered substantial increases also. The 2,174 cases reported for Minneapolis represented a rate of 571 per 100,000 in 1920, an increase from 147 in 1919. Davenport, Iowa, reported a rate of 194 in 1919 and 435 in 1920, Des Moines an increase from 58 to 122. The Missouri cities reported as follows: Kansas City, an increase from 85 to 158 per 100,000; St. Louis, from 11 to 34; Columbia, from 144 to 192. The Nebraska group showed a marked increase for Grand Island (from 1,276 to 2,976 per 100,000) in a population of 14,000. While decreases were recorded for Lincoln and Omaha, the 1920 rates were still high (672 for Lincoln and 251 for Omaha). The Kansas group reported increases in the incidence-rate as follows: Kansas City, from 44 to 85; Lawrence, from 24 to 124; Topeka, from 66 in 1919 to 194 per 100,000 in 1920. The South Atlantic states recorded sharp decreases in the case-incidence of North Carolina cities, chiefly for Wilson, Winston-Salem, Weldon, and Raleigh.

In the East South Central states, the

Kentucky cities recorded increases. The Louisville rate increased from 8 to 10 per 100,000; for Paducah the increase was from 77 to 251 per 100,000 of population. Tennessee cities (Memphis and Nashville combined) reported an increase from 18 to 69 per 100,000 of population. In Alabama, the Birmingham rate rose from 31 in 1919 to 149 in 1920; in Gadsden, a city of 15,000, the rate increased from 326 to 1,018 per 100,000 of population.

Cities of the West South Central group returned data which showed decreases in Arkansas cities, but increases for the two Louisiana cities. In New Orleans, the case-incidence rate increased from 25 in 1919 to 230 in 1920 per 100,000. The 891 cases in 1920 were accompanied by 134 deaths, a case-fatality rate of 15 per cent. In the Mountain states, Great Falls, Montana, reported an increase from 282 to 294 per 100,000, and Denver an increase from 221 to 372.

The Pacific Coast group showed for Alameda an increase from 94 to 135 per 100,000; Los Angeles, from 20 to 47; Oakland, from 31 to 61; Pasadena, from 18 to 33; Sacramento, from 115 to 194; San Francisco, from 41 to 80 per 100,000. The Portland, Oregon, rate declined slightly, from 648 to 564, but this latter rate is one of the highest recorded for large cities in 1920. In Washington, Aberdeen registered an increase from 98 to 411 per 100,000; the Bellingham rate increased from 571 to 692 per 100,000.

In Tacoma, during 1920, the rate was 345 per 100,000 of population. The Spokane figures showed an increase from 593 to 1,107. This latter rate for 1920 represented 1,156 cases. The Seattle rate in 1920, 260 per 100,000 for 821 reported cases was high.

5. *Opposition to Vaccination in Certain Areas and the Increased Incidence of Smallpox*

It would seem, therefore, that where, despite the efforts of conscientious health officials, the forces opposed to vaccination held the upper hand, the prevalence of smallpox is high and increasing. The menace of the disease is not confined to these particular areas, however. If it were, it might be well to permit these areas to reap the inevitable harvest of an increasing number of cases of the disease and to suffer the consequences, perhaps a sudden shift of virulence and a high mortality. But the presence of this dangerous disease in areas which have easy communication with all other parts of the United States and Canada, constitutes a menace to the health and safety of the other and innocently exposed population. The existence of smallpox plague-spots in certain areas threatens the safety of all other areas having connection with these focal centers.

The following table gives a consolidation of the smallpox figures reported by health officers of cities within the specified state and divisional groups.

CONSOLIDATION OF DATA ON SMALLPOX PREVALENCE IN AMERICAN CITIES
GROUPED BY MAIN GEOGRAPHIC DIVISIONS AND BY STATES

No. of Cities	Geographical Divisions	Population of Cities, 1920	Cases				Deaths				Deaths per 100 Cases	
			1920		1919		1920		1919		1920	1919
			Num- ber	Per 100,000	Num- ber	Per 100,000	Num- ber	Per 100,000	Num- ber	Per 100,000		
10	Cities in Canada.....	1,390,909	2301	165	2088	150	18	1	—	—	.8	—
233	Cities in United States.....	28,904,208	16,803	58	12,247	42	163	1	25	*	1.0	.2
42	New England States.....	2,867,342	141	5	124	4	—	—	—	—	—	—
64	Middle Atlantic.....	11,919,349	240	2	114	1	—	—	—	—	—	—
50	East North Central.....	7,114,074	4977	70	3412	48	9	—	6	—	.2	.2
17	West North Central.....	2,184,749	5196	238	2722	125	3	—	6	—	.1	.2
20	South Atlantic.....	1,981,883	728	37	3649	184	1	—	3	—	.1	.1
13	East South Central.....	893,253	996	112	343	38	12	1	2	—	1.2	.6
5	West South Central.....	505,601	933	185	151	30	134	27	7	1	14.4	4.6
7	Mountain.....	336,682	1146	340	694	206	1	—	—	—	.1	—
15	Pacific.....	1,101,275	2446	222	1038	94	3	—	1	—	.1	—

*Less than .5 per 100,000 of population.

CONSOLIDATION OF DATA ON SMALLPOX PREVALENCE IN AMERICAN CITIES
GROUPED BY MAIN GEOGRAPHIC DIVISIONS AND BY STATES (Continued)

No. of Cities	Geographical Divisions	Population of Cities, 1920	Cases				Deaths				Deaths per 100 Cases	
			1920		1919		1920		1919		1920	1919
			Num- ber	Per 100,000	Num- ber	Per 100,000	Num- ber	Per 100,000	Num- ber	Per 100,000		
42	New England:.....	2,867,342	141	5	124	4	—	—	—	—	—	—
6	Maine.....	154,717	99	64	76	49	—	—	—	—	—	—
4	New Hampshire.....	141,959	—	—	2	1	—	—	—	—	—	—
1	Vermont.....	22,779	2	9	—	—	—	—	—	—	—	—
23	Massachusetts.....	1,912,570	38	2	41	2	—	—	—	—	—	—
2	Rhode Island.....	52,048	—	—	—	—	—	—	—	—	—	—
6	Connecticut.....	583,269	2	—	5	1	—	—	—	—	—	—
64	Middle Atlantic:.....	11,919,349	240	2	114	1	—	—	—	—	—	—
30	New York.....	7,524,846	103	1	71	1	—	—	—	—	—	—
18	New Jersey.....	1,397,035	98	7	7	1	—	—	—	—	—	—
16	Pennsylvania.....	2,997,468	39	1	36	1	—	—	—	—	—	—
50	East North Central:.....	7,114,074	4977	70	3412	48	9	—	6	—	.2	.2
18	Ohio.....	2,311,690	1871	81	1487	64	4	—	3	—	.2	.2
6	Indiana.....	203,078	448	221	451	222	—	—	1	—	—	.2
11	Illinois.....	3,010,080	553	18	318	11	1	—	—	—	.2	—
10	Michigan.....	1,471,585	1753	119	1049	71	4	—	2	—	.2	.2
5	Wisconsin.....	117,641	352	299	107	91	—	—	—	—	—	—
17	West North Central:.....	2,184,749	5196	238	2722	125	3	—	6	—	.1	.2
1	Minnesota.....	380,582	2174	571	560	147	—	—	2	1	—	.4
3	Iowa.....	219,357	491	224	285	130	—	—	—	—	—	—
6	Missouri.....	1,143,747	1056	92	428	37	3	—	2	—	.3	.5
	North Dakota*											
	South Dakota*											
3	Nebraska.....	260,496	1265	486	1368	525	—	—	2	1	—	.1
4	Kansas.....	180,567	210	116	81	45	—	—	—	—	—	—
20	South Atlantic:.....	1,981,883	728	37	3649	184	1	—	3	—	.1	.1
	Delaware*											
2	Maryland.....	763,663	45	6	28	4	—	—	—	—	—	—
1	District of Columbia.....	437,571	89	20	174	40	—	—	1	—	—	.6
7	Virginia.....	476,399	293	62	282	59	—	—	—	—	—	—
1	West Virginia.....	39,608	27	68	23	58	—	—	—	—	—	—
6	North Carolina.....	127,546	171	134	3127	2452	1	1	2	2	.6	.1
	South Carolina*											
2	Georgia.....	45,538	—	—	10	22	—	—	—	—	—	—
1	Florida.....	91,558	103	112	5	5	—	—	—	—	—	—
13	East South Central:.....	893,253	996	112	343	38	12	1	2	—	1.2	.6
3	Kentucky.....	300,359	332	111	38	13	3	1	—	—	.9	—
2	Tennessee.....	280,693	194	69	51	18	—	—	—	—	.2	—
6	Alabama.....	277,242	450	162	154	56	1	—	2	1	.2	1.3
2	Mississippi.....	34,959	20	57	100	286	8	23	—	—	40.0	—
5	West South Central:.....	505,601	933	185	151	30	134	27	7	1	14.4	4.6
3	Arkansas.....	105,707	42	40	53	50	—	—	1	—	—	1.9
2	Louisiana.....	399,894	891	223	98	25	134	34	6	2	15.0	6.1
	Oklahoma*											
	Texas*											
7	Mountain:.....	336,682	1146	340	694	206	1	—	—	—	.1	—
2	Montana.....	39,221	98	250	97	247	—	—	—	—	—	—
	Idaho*											
	Wyoming*											
4	Colorado.....	287,158	1048	365	597	208	1	—	—	—	.1	—
	New Mexico*											
1	Arizona*	10,303	—	—	—	—	—	—	—	—	—	—
	Utah.....											
	Nevada*											
15	Pacific:.....	1,101,275	2446	222	1038	94	3	—	1	—	.1	.1
	Washington.....	242,324	1731	714	780	322	2	1	1	—	.1	.1
1	Oregon.....	17,679	34	192	6	34	—	—	—	—	—	—
10	California.....	841,272	681	81	252	30	1	—	—	—	.1	—

*No data available.

II. MEASURES OF SMALLPOX CONTROL IN AMERICAN AND CANADIAN CITIES

Certain information on measures of smallpox control became available also from the replies of health officers on the

inquiry schedule. The returns may be summarized as follows:

1. Are Smallpox Cases Imported?

In nearly two thirds of the cities in question, it was reported by the health

officers that smallpox had its origin in points outside the city. This impression seemed to be stronger in the Middle West, on the Pacific Coast, and in the South, than in the Northeast or in Canada.

2. *Is Vaccination Compulsory for Admission to Schools?*

In half the cities, evidence of satisfactory vaccination of children entering school is required. In New England and in New Jersey and Pennsylvania this requirement held for nearly four fifths of the cities reporting. In about one third of the cities of New York state, in Canada, in the South and the East North Central states, this measure was required. On the Pacific Coast, only 14 per cent of the cities reported vaccination as a requirement for admission to schools. In general, the figures with respect to this control measure were high in those areas where, apparently, public sentiment is not strongly opposed to vaccination practice, and lowest, as on the Pacific Coast, where there is a considerable sentiment against vaccination practice.

Some figures were reported by health officials on the percentage of school-children vaccinated, but these were reported in such broad terms and were based, perhaps, only upon the evidence of personal impression; so it was thought unwise to publish the data. It would be well if health officials determined by actual census of the schools the proportion of such children protected by vaccination. This fact is of supreme importance in the movement of smallpox control and the figures should be obtained in order that a proper idea of the extent of protection among school children may be obtained.

3. *Difficulties in Enforcing Vaccination Laws*

Two thirds of the cities had more or less difficulty in enforcing vaccination laws. About the same percentage held

for New York state. The least difficulty seemed to be encountered in the Southern cities on the Atlantic seaboard, in New England, and in Pennsylvania and New Jersey. The greatest difficulties seem to exist in the West North Central states and on the Pacific Coast. A high percentage was reported also from a group of Middle Western cities (82 per cent reported difficulty in enforcing vaccination laws).

Information was also given by health officers on the special difficulties met in their work. On the Pacific Coast, one quarter of the cities reported public indifference as an important difficulty; inadequate legislation was mentioned in one third of the reports of this section of the country. Strong opposition from Christian Scientists and irregular medical cults was reported in 14 per cent of these cities, and obstructive tactics of school boards in 9 per cent of the cases in this particular region. In the West North Central states public indifference, inadequate legislation, the opposition of parents, Christian Scientists, irregular medical cults, and organized anti-vaccination movements seemed to be the chief sources of difficulty. In Canada, public indifference and the activities of anti-vaccinationists were specified. In the cities of the Atlantic Coast region of the South, where the least opposition was encountered, public indifference, inadequate legislation, opposition of parents, the fear of death from tetanus and vaccination accidents, the existence of "religious grounds" and the mildness of prevailing smallpox seemed to be the chief elements in the health officer's problem with respect to smallpox control. Of course, no extensive numerical data could be compiled under these heads but it is believed that the figures are of sufficient value to indicate, as for the Pacific Coast incidence, the extent and sources of the difficulty experienced in the protection of the population of cities against the smallpox menace.

4. *Procedure in Handling Smallpox Cases*

"Placarding only" was reported from two of the cities. Quarantine or isolation seemed to be the chief measure employed, i. e., in 80 per cent of the cities. Hospital treatment of smallpox cases was reported in 28 per cent of the cities. In a number of these municipalities either hospital treatment or quarantine was employed.

Contacts received vaccination treatment only in 27 per cent of the cities, and both vaccination and quarantine in 32 per cent of the cities. Two of the cities reported that contacts were given hospital observation, and in seven instances observation and parole were the only measures employed.

5. *Sentiment of Community Toward Compulsory Vaccination*

In general, the figures on this topic of the inquiry schedule, followed very closely the facts on the requirement of compulsory vaccination for admission to school. In slightly more than half of these cities, sentiment seemed to be in favor of vaccination. In Southern cities on the Atlantic seaboard, in New England and in New York and Pennsylvania, well above 70 per cent of the cities reported a favorable trend of community sentiment. Most opposition of sentiment was recorded on the Pacific Coast, where two thirds of the cities reported that the community opinion was opposed to compulsory vaccination. The Middle West and Canadian cities followed with a figure of 46 per cent of the cities opposed to compulsory vaccination.

6. *Facilities for Free Vaccination*

Practically 90 per cent of the cities had facilities for free vaccination. In the eastern part of the South, all of the cities reporting had facilities, generally in the health department, for administering free vaccination. In New York state, 17 per cent of the cities; in Canada, 9 per cent; in the West North Central

states, 22 per cent; throughout the Southwest, 19 per cent; and in the Middle West, 18 per cent had no facilities for free vaccination. On the Pacific Coast, 9 per cent reported the same condition. In most of the cities where free vaccination is available, the health department seemed to be the agency in supplying such service.

7. *Is Vaccine Furnished Free?*

Half of the cities reported that they furnished vaccine free. In the South, in Canada and in the New England states, between 70 and 80 per cent of the cities maintain this service. On the Pacific Coast, only 18 per cent of the cities reported free vaccine. In about one third of the cities in the Middle West and in the West North Central states, this service was specified.

8. *Who Makes the Vaccine?*

In nearly 70 per cent of the cities, commercial vaccine is used. In the Southwest and in the Middle West, more than 90 per cent, and on the Pacific Coast 100 per cent of the cities recorded the use of commercial vaccine. In New York state, commercial vaccine was reported in only one half of the cities. In 30 per cent of these New York state municipalities, the New York City Department of Health furnished the vaccine, and in 27.6 per cent, the state laboratory. In the eastern part of the South, the state laboratory seemed to be the chief agency supplying vaccine outside of commercial firms. In New England, 40 per cent of the cities used commercial vaccine and 50 per cent used the vaccine supplied by the state laboratory. In Canada, where nearly two thirds of the cities used commercial vaccine, another quarter of the cities secured their supply from the university laboratories.

9. *Is Chicken-pox in Adults Verified?*

This seemed to be a very generally employed procedure; nearly 90 per cent of the cities reported that chicken-pox

was verified by some agency satisfactory to the department of health. Nearly all of the New York state cities and all of the Canadian cities employed this procedure. In the Middle West only 80 per cent of the cities verified chicken-pox in adults.

10. Conclusion

It will seem from the foregoing that there is great diversity of practice in smallpox control. What seems to be needed is that each city should take stock of its smallpox situation, and the degree to which it is menaced by importation of the disease from areas now showing a high prevalence of cases of some severity. These facts should be brought to public attention and sufficient opinion created to secure needed changes in vaccination legislation, and greater coöperation between school boards, health boards and parents.

There is hardly any public-health evidence more definite than that vaccination, properly performed, protects against smallpox. The community with the least number of unprotected persons is likely to have the least smallpox. That

is the evidence of smallpox data we have been able to secure from American states and cities during the past two years. It is greatly to be feared that unless the American people take heed of the numerous warnings which have been issued by conscientious, able health officers in recent years, there may grow up a still greater number of persons unprotected against smallpox. In that event, there may be a recurrence of the extensive and destructive epidemics of a century ago.

At no time during the past 20 years has smallpox menaced the American population as much as it does to-day. We are threatened, not only by the importation of the disease from areas of central and southern Europe, as a result of the revival of immigration, but also from parts of our own country where vaccination practice has been lax and from which there are easy means of communication with other cities in the United States and Canada. *The only measure which promises any smallpox protection to the people of the United States, is vaccination performed in a proper, cleanly manner.*



THE LEAGUE OF RED CROSS SOCIETIES

The League of Red Cross Societies is the concrete answer to the question thoughtful Red Cross workers everywhere began to ask as soon as the World War was ended. Were the Red Cross organizations, so strong and so full of power for good in the world, to become weak and ineffective through lack of a definite and useful program for peace time work? The League is also a practical testimony to the growth of a world-wide conviction that to be in a real sense one's brother's keeper is the part of wisdom; that, no matter what artificial barriers are fixed by political governments,

health problems are not national but world affairs, and that no community can account itself safe unless the sources of disease at the end of a chain of communities are wiped out.

At the close of the war the ideas later embodied in the League's Articles of Association were laid before the International Committee of the Red Cross in Geneva, and as a result of conferences which followed, it was decided that the Committee should not take up the suggested new program, but that a new organization should be created to supplement war-time humanitarian activities



MEDICAL ADVISORY BOARD AND STATE DEPARTMENT OF HEALTH, LEAGUE OF RED CROSS SOCIETIES

First Row: Left to right, Board (sitting), Colonel Baduel, Dr. Prochaska, Sir George Newman, Dr. Bernard, Dr. Madsen, Dr. Linsly Williams.

Second Row: Left to right, Staff (standing), Dr. de Peyer, Mr. Stuart, Mr. Clarke, Dr. Francis, Miss Olmsted, Colonel Longley, Professor Winslow, Dr. Pitt, Mr. Hewitt, Dr. Earp, Mr. Stouman, Dr. Humber, Lt. Col. Ritchie.



Popular health instruction unit of the League of Red Cross Societies, working in Czecho-Slovakia. The unit consists of one English woman in charge, two Czech doctors as lecturers, one advance agent and a mechanic, cinema-operator.

with a peace-time program of public health; that a League should be organized to do, on behalf of its member societies and their countries, certain important things which were not being done by any other central organization. The founders of the League were the Red Cross Societies of the United States, Great Britain, France, Italy, and Japan, and since the foundation in 1919, Red Cross organizations of thirty-one other countries have become members. The League is non-political, non-governmental and non-sectarian, and its object is:

1. To encourage and promote in every country in the world the establishment and development of a voluntary national Red Cross organization, having as its purposes the improvement of health, the prevention of disease and the mitigation of suffering throughout the world, and the securing of the coöperation of such organizations for these purposes.

2. To promote the welfare of mankind by furnishing a medium for bringing within the reach of all peoples the benefits to be derived from present known facts and new contributions to science and medical knowledge, and their application.

3. To furnish a medium for coördinating relief work in case of great national or international calamities.

The League is organized on a representative basis. The General Council consists of representatives of all the national Red Cross societies which are members. The Board of Governors is made up of five representatives of national societies: Henry P. Davison, American; Hon. Sir Arthur Stanley, British; Jules de la Boulinière, French; Conte Senator G. Frascara, Italian; and Professor A. Ninagawa, Japanese. Sir David Henderson, director general, and William E. Rappard, secretary general, are additional members of the Board. The headquarters of the League have been established at 9 cour de Saint-Pierre, Geneva, Switzerland, and in the brief two years of its existence the new

central organization has more than justified its existence.

In the first year of its organization, the League of Red Cross Societies was called upon by the League of Nations to co-operate in the fight against epidemic diseases in Eastern Europe. A commissioner and a considerable number of health workers spent a large part of the year 1920 in Poland, aiding the Polish authorities and the various voluntary organizations in anti-typhus work. A feature of the joint program of the two Leagues was a sanitary survey of Roumania, and at the same time a group of League research workers made a study of typhus and typhus infection in Warsaw. As a result of the League's efforts to build up the Polish Red Cross, the membership of that society has been increased from about 30,000 to more than a million, and the American Red Cross is in possession of the results of a study of Polish conditions, undertaken by the League with reference to the establishment of the extensive child-welfare program which the American Red Cross has in view.

At the request of the Czecho-Slovakian Red Cross, the League made a thorough inquiry into the typhus situation in Slovakia and Carpathian Russia, with the result that recommendations for the bettering of quarantine and the creation of other internal measures to check the spread of the epidemic were adopted and put into operation. A child welfare program was drawn up for Slovakia, and with funds furnished through the Lady Muriel Paget Mission a training center for workers has been established near Zilina under the League's medical director. The League purchased and handled large quantities of materials and supplies furnished to Slovakia by the British Red Cross and the British government.

A survey of health conditions in Jugoslavia has been undertaken at the request of the Serbian Red Cross, and in accordance with arrangements made through

the Spanish Red Cross, the League is assisting a commission under the Spanish minister of the interior in a campaign against malaria. The work necessitates the examination and treatment of large numbers of malaria sufferers, the study of means of draining malaria-breeding centers, and the training of workers. In the latter work the government and Red Cross of Italy have coöperated by allowing the League to send workers to attend the school of anti-malarial prophylaxis under the Central Direction of the Public Health in Italy.

A highly important activity of the League was the convocation of an international congress in October, 1920, for the revision of the standard classification of the causes of death. Because health officials of one country have differed so widely from officials of another in their several classifications of causes of death it has been impossible to compare vital statistics in different countries with any degree of accuracy. Dr. Bertillon, of Paris, is permanent secretary of the body which has handled the matter of harmonizing international statistics in the past. As he was greatly hampered by difficulties resulting from the war, the French authorities gave full approval to the League's action in taking the initiative and giving material aid to him. Of even greater importance was the League's contribution to world health in the organization of the North European Congress to consider methods of combating venereal diseases which convened at Copenhagen in May, 1921.

At the request of the British Red Cross, the League has undertaken to inspect sanatoria which now exist or are contemplated for the use of tuberculosis patients in which the British Red Cross is interested; and since the furtherance of public health nursing is one of the League's most important objects, a course for the special training of qualified nurses has been established in London. Nineteen nurses from eighteen different countries have been sent to the

school on scholarships and the League is in communication with the Red Cross in each of the eighteen countries, with a view to keeping informed as to what the nurse's problem will be, on her return, and to aiding in preparing the local field for her work. A unit for popular health instruction has been established in Prague in coöperation with the Czechoslovakian Red Cross, and for the instruction of its lecturing personnel the Rockefeller Foundation has loaned experienced members of its units now working along like lines in France.

Space is lacking to set forth all the activities of the League in educational and preventive lines, but among them are the establishment of a library containing not only books but films which may be borrowed for use, the issuing of the bimonthly *International Journal of Health* and the monthly *Bulletin* of the League of Red Cross Societies, and the recent publication of a pamphlet, "Elements of Hygiene," a resumé of the booklet of the Commission for the Prevention of Tuberculosis in France. The pamphlet is published in Czech, English, French, German, Italian, Roumanian, Portuguese, Serbian, and Spanish, and arrangements have been made to print on the first and last pages a description of any national organization which chooses to buy copies of it and use them in its own field. The Department of Health Service, American Red Cross, Washington, D. C., has taken charge of the sale of the pamphlet in this country.

At the meeting of the Medical Advisory Board of the League in Geneva, July 7, resolutions of interest to all American health workers were adopted, by a quorum made up of Professor Cesare Baduel, director of the Italian Red Cross; Professor Léon Bernard, French Ministry of Hygiene; Professor T. H. Madsen, director, State Serum Institute, Copenhagen; Sir George Newman, Ministry of Health, England, and Dr. Prochaska, minister of public health, Czechoslovakia. In spite of world-wide eco-



Crowd waiting in line for admission to popular lectures on tuberculosis by the Health Educational Unit of the League of Red Cross Societies in a suburb of Prague, Czecho-Slovakia.



"TUBERCULOSIS SPECIAL," railroad car used for health propaganda by the Rockefeller Tuberculosis Commission in France. This car carries the personnel of a unit, projection apparatus, films, pamphlets, etc.

conomic prostration and the necessity for economy, the Medical Advisory Board maintains that the work in child welfare and the fight against tuberculosis and venereal diseases must not be curtailed. The resolutions follow:

I. THAT in view of the fact that the primary object of the League of Red Cross Societies is the development of national Red Cross Societies for community service in the field of public health and since the funds at its disposal are, and are likely to remain, limited, it is desirable that the League should concentrate its efforts upon public health objectives obtainable through the medium of Red Cross effort and should strive to obtain those objectives primarily through the medium of Red Cross Societies, coöperating as closely as possible with all official and voluntary agencies having the same purposes in view.

II. THAT in view of the necessity of restricting the League's liabilities the Medical Advisory Board consider that the abandonment of the special divisions of

- 1 Sanitation,
- 2 Communicable diseases,
- 3 Malaria work,
- 4 Vital statistics,

is in the line of sound policy at the present time; thus the work of the League should be concentrated for the present year as far as practicable upon

- a The development of public health nursing,
- b Child welfare, and
- c Tuberculosis and venereal disease work, mainly on an educational basis, as the primary technical field of its activity.

The educational aspect of sanitation, of the control of communicable diseases and of vital statistics, as well as of nursing, child welfare, tuberculosis and venereal disease work is recognized to be of fundamental importance.

III. THAT the *International Journal of Public Health* occupies so definite and important a place in the international public health field and has given such good promise of filling a recognized need, that it should be continued and supported substantially along its present lines.

VI. THAT the Medical Advisory Board are strongly of opinion that the admirable work undertaken by the League in its international course in London for the training of Public Health nurses should be continued, and if possible enlarged and even extended to other countries where the cost of living may allow of an increased number of students.

VII. THAT national and international conferences on Child Welfare should be organized in a way similar to those which

have been organized by the Division for Combating Venereal Diseases.

VIII. THAT the Board advise that before engaging in further Child Welfare work in any European country, the League should carefully study the aims and purposes of the present Child Welfare program of the American Red Cross in Europe, seeking to coöperate with it and to secure permanent continuation of the work on a national basis by local organization.

IX. THAT the Medical Advisory Board hope that every effort will be made to develop and make vigorous the work of the League in regard to tuberculosis, in which they think more field and practical work should be done by the League for the several Red Cross societies, and, further, that steps will be taken to associate as closely as possible the International Union against Tuberculosis with the League.

X. THAT whilst the Medical Advisory Board recognize the difficulties of the situation in respect of venereal diseases, they consider that the balance of evidence is in favor of wise and appropriate action on the part of the League, partly because the prevalence of venereal diseases is largely due to the war and partly because it is a problem the solution of which depends in large measure upon the enlightenment and education of public opinion. The Board advise, therefore, that the work of the League in regard to venereal diseases should be continued actively, particularly in the way of regional conferences which have proved eminently successful and in securing the co-ordination of the activities of voluntary societies in this campaign throughout the world.

XI. THAT the Medical Advisory Board strongly approve any suitable efforts which the League may find it possible to make, by the provision of scholarships or otherwise, in order to stimulate and encourage the training of expert personnel for Red Cross service in the fields of child welfare, tuberculosis and venereal diseases.

XII. THAT the conduct of general or special surveys of the health situation, in special emergencies or where a national Red Cross society demands or requests such assistance, is an appropriate function for the League of Red Cross Societies, provided that competent professional investigators are employed and that a fitting relation is secured with the official governmental authorities of the area concerned.

XIII. THAT the Medical Advisory Board approve of the operation by the League of Demonstration Units for limited periods (a) when adequate funds are available from sources other than the general appropriations of the League, (b) when such a unit possesses definite educational value, and (c) when there is reasonable

ground to believe that the work will be taken over and maintained by the local Red Cross society, or, in default, by another responsible body in authority, after the demonstration period is over.

XIV. THAT the Medical Advisory Board recommend that the League continue its activity in popular health education and extend it, if possible, emphasizing the subjects of child welfare, public health nursing, tuberculosis and venereal diseases, and that a strong division be devoted to popular health instruction.

XV. THAT the development of Red Cross health work throughout the whole world would, in the opinion of the Medical Advisory Board, be advanced by the promulgation of a definite Red Cross program based upon a system of "healthy study classes," conferences or other kinds of personal instruction (by conference, by leaflet, by poster, by film or by other method), de-

signed to guide the members of Red Cross societies in regard to the principles of personal and public hygiene and to enlist them in an active campaign for communal health betterment.

XVI. THAT the members of the Medical Advisory Board keenly appreciate the restrictions and difficulties which beset the Medical Department of the League during the last year.

We desire to express our satisfaction of the results so far obtained and express our thanks to the various members of the Medical Department, and especially to Professor C.-E. A. Winslow, the Director of the Department, for the careful judgment he has displayed and the manner in which he has performed the difficult duties of his office.

We also express our view that the medical policy developed by the Director will undoubtedly be productive of larger results.



TICKETS FOR SEMICENTENNIAL BANQUET

The demand for tickets to the Semicentennial Banquet to be held Wednesday, November 16, in the Grand Ballroom of the Hotel Astor at 7:30 P. M., threatens to be greater than the supply. In addition to the guest of honor, Dr. Stephen Smith, the founder of the Association, it is expected that Surgeon General Merritt W. Ireland, U. S. A., Surgeon General E. R. Stitt, U. S. N., and Surgeon General Hugh S. Cumming, U. S. P. H. S., Governor Nathan Miller, and New York City officials will attend. The chief health officers and prominent sanitarians and public-health representatives of most of the states, the provinces of Canada, and of Mexico and Cuba, have indicated their intention of being present.

The price of banquet tickets is \$5.00. Checks should be made payable to "Treasurer, American Public Health Association." Reserved tickets will be held at the Information Bureau, Hotel Astor, until called for. Refunds will be made on request until the morning of the banquet.

Tables will seat ten. NOW is the time to make up your table. Consult your friends and combine your orders. Informal dress.

THE PUBLIC HEALTH PROGRAM OF THE LEAGUE OF WOMEN VOTERS

VALERIA H. PARKER, M.D.

Executive Secretary, U. S. Interdepartmental Social Hygiene Board; Chairman, Social Hygiene Committee, National League of Women Voters

Read before the Conference of State and Provincial Health Authorities, Boston, June 1-2, 1921

EVERY health officer knows that the organized women have always been among the most active supporters of public health. Past history shows us that many health measures of public service were initiated by women at a time when legislators had not been educated up to the point to feel that public health was purchaseable. We had our village improvement associations, and clean-up campaigns, and health committees in the various women's organizations. Many of our first public-health nurses were supplied by the women's organizations raising their salaries and providing their transportation with great difficulty, through food sales, and other activities. We welcomed the taking over of these measures by public agencies.

It was not, however, until the enfranchisement of women that they were able to decide as to how they might best contribute to the permanent public-health work of their country, and I think it is a significant fact that when the women organized the League of Women Voters in St. Louis two years ago this spring, the public-health question, although not taken up as a matter by itself, should have permeated the various committees organized at that time. There is hardly one of the seven active committees that is not concerned with some phase of public-health work. The League of Women Voters was organized not as a separate women's organization antagonistic to male voters, but as an organization of enfranchised women desiring to contribute to the country and to their various localities some permanent and constructive measures upon which women have a particular point of view. We

have committees simply to cover those phases of citizenship in which women as women do have a peculiar and special point of view.

The committees organized in St. Louis were seven. The committee on women in industry is composed of persons studying along industrial lines and deeply concerned with the health and physical efficiency of women in industrial work. They are concerned with the conservation of the health and strength of mothers who have to bear a part of the support of the family before and after the birth of their children.

The committee on food supply and demand is tremendously concerned with those measures which will ensure to the public healthful food at lower prices.

The committee on child welfare deals with the health of children as well as with other phases of child care. The committee on child welfare in its first report at the annual meeting held in Chicago recommended the endorsement of the Sheppard-Towner Bill. It recommended the endorsement of that bill because it was concerned not only with health measures but with educational and other measures needed for the protection and safety of the child. It has been said in connection with that bill that the League of Women Voters was antagonistic to the Public Health Service, but I hope to show you as I go further on in my report that, on the contrary, the League of Women Voters has been one of the staunch supporters of all the public-health agencies. So it was that when the Sheppard-Towner bill was introduced at the first and second conventions, we were glad that the United

States Public Health Service itself, through its Surgeon General, had agreed to the bill in its present form.

The committee on Americanization is indirectly concerned with public health. It is concerned with presenting to the foreign-born citizens our ideals and standards of American citizenship, which include the consciousness of the interdependence of individuals and of the community and of the importance of observing health regulations and laws.

The committee on uniform laws has to do indirectly with health because it is working to see that every one of our forty-eight states provides equal guardianship for the child; that there is no state in which one parent can will the child away from the other parent; that marriage and divorce laws shall not be discriminatory. The various laws that discriminate against the woman and the child in certain of the states we wish to see raised in standard.

The work of the committee on election laws and methods has also an indirect relation to public health. During our long fight for citizenship we have discovered that some of the things most needed in the lives and welfare of human beings are blocked by certain political intrigues and that there are certain public officials who are controlled in an undesirable way. In that committee we are concerned with seeing that every state has proper provision for safeguarding the privileges of the ballot.

I have purposely left until the last my own committee, the committee on social hygiene, which has been most actively and directly concerned with public-health measures. In giving you the history of the fashioning of this committee you will perhaps see exactly what the machinery of the League of Women Voters offers. The first duty of this committee, after I had been appointed chairman at the St. Louis Convention two years ago, was to call together a social-hygiene representative from each state as a national social-

hygiene committee, to formulate a definite program of legislation which, if adopted in each of the forty-eight states, would give to our entire nation that permanent moral and physical protection which was given to a group of our citizens during the crisis of the world war. A year ago last fall, during the International Conference of Women Physicians held in New York, the national social-hygiene committee was called together. A large proportion of the members were connected with state or local boards of health. A large majority of them were physicians. During the conference we considered all phases of the program. Wherever there was a controversial point we invited experts on both sides of the question to discuss the matter and we received all the information we felt was necessary. We formulated the program which was adopted by the National League of Women Voters a year ago last February. Naturally, such a program could not be a detailed one. It could not be carried out in a few years. Some of the states would take many years to complete it, while in others only one or two of the specified laws were needed. This program, with very few changes, was again endorsed at the second annual convention held in April.

The three main features of this program are:

I. The Abolition of Commercialized Prostitution.

II. Venereal Disease Control.

III. Protection of Delinquents, Minors, and Defectives.

Many years ago women's organizations sought after what was termed "a single standard of morals." It was a number of years before science took up the moral principles declared by these women, when the organized physicians of the country declared that continence is not incompatible with health. During the war our government took a broad stand as the first nation to adopt a program for the moral protection of the men

of the fighting forces which made no compromise with vice. Encouraged by this stand, we adopted all of those measures which have been found necessary by the various law-enforcement agencies to abolish commercialized vice; the abolition of segregated districts; the punishment of all frequenters of disorderly houses; the punishment of men who give money as well as women who receive money for public prostitution; heavy penalties for those who profit through commercialized vice; the prevention of street solicitation by men or women; strict enforcement of laws prohibiting the sale of alcohol for beverage purposes and of laws prohibiting the sale of habit-forming drugs without prescription.

During the war there arose a great deal of confusion owing to the fact that very frequently the police authorities decided that certain women should be imprisoned because they were infected with a venereal disease. They took the responsibility of deciding this. In other cases, health officers decided upon penalties, and there was a great deal of confusion between the two bodies. We believe that the matter of health and the matter of punishment should be two entirely different things. The woman who is most delinquent is not always most seriously diseased. We believe there should be a provision for hearings under the state and local boards of health.

Last fall I ran across a curious condition in one state where the health officer told me they were endeavoring to treat the diseased women on the penitentiary grounds. There was some feeling against this. They were trying to get through a law which would make it a felony to transmit knowingly a venereal disease. A health officer said, "This law will apply to the women prostitute because no woman could be diseased without knowing it." I said, "How about the man who infects his wife and children?" and he replied, "No man would knowingly do such a thing as that."

In the third section of our program we have the protection of delinquents, minors, and defectives. While this may seem a rather comprehensive program, it was interesting to note at our second convention in Cleveland that eighty of the measures recommended had been passed; 122 had failed; while 155 were still pending. We do not claim that it was entirely the work of the League of Women Voters that initiated so many social-hygiene laws during the recent legislative session, but we do claim that in many states the League of Women Voters did give active support and propaganda necessary to secure the passage of such laws. Wisconsin had estimated an appropriation of about \$140,000 for health work, \$40,000 being for social-hygiene purposes. The bill passed both houses and went to the Governor, who held it up for two weeks. The assistant chairman of the social-hygiene committee of the League of Women Voters sent out letters not only to the League but to other women's organizations. During the week the Governor telephoned to the office of the State Board of Health saying, "If any one asks you about such and such a measure, tell them I have signed it, and for God's sake, call off the women."

Under federal legislation, in the original draft of the program, the first convention endorsed the appropriation of a sum of money for the continuation of the work of the venereal disease division of the United States Public Health Service and also for the continuation of the work of the Interdepartmental Social Hygiene Board.

Just prior to the meeting of the second convention, Congress had appropriated money needed for the United States Public Health Service but had adjourned without appropriating money for the continuation of the United States Interdepartmental Social Hygiene Board. The women were particularly interested in that Board on account of the way in which it brought together the heads of

the army and navy and the United States Public Health Service, for the purpose of giving special moral and physical protection. We very much desired that this Board should be continued. We knew that the Attorney-General had given his opinion that this Board was not started as a war measure. It was designed for the permanent protection of the army and navy, and so, at Cleveland, we passed resolutions urging the present Congress to appropriate funds for the continuation of this important work. We were particularly anxious that the social protective measures offered by the program, which were indirectly the law-enforcement feature, should continue. So we have concentrated through this social-hygiene committee on the passage of that measure. I am glad to report that the three surgeons general agreed upon a definite program by which certain of those funds should be administered by the Public Health Service, and the educational and protective social measures by the Board, and the women of the country are standing back of them.

We are disappointed to report that although the Senate Appropriations Com-

mittee has recommended \$425,000, they have eliminated the educational and research measures, which means that work in colleges must cease and much of the research work must stop.

From rather a wide experience in the various states, I think I may say that the states which are carrying on the best health work are those in which the health officers have recognized the value of the coöperation of the women. The women are glad to have the recognition of the health officers and to carry on such measures as will best promote the public health of the community. When a health officer wants to get some information to the public he knows that the organized women of the localities are the ones who will give out that information and he gets his measure over.

Finally, we wish to say that the League of Women Voters is not antagonistic to any public health organization; that, on the contrary, it is organized for the sole purpose of stimulating and promoting those measures which will make for the welfare and health of the people of our nation.



THE NATIONAL CHILD HEALTH COUNCIL

COURTENAY DINWIDDIE

Executive Secretary, National Child Health Council

Read before the Conference of State and Provincial Health Authorities, Boston, June 1 and 2, 1921

ALL of us in the public health field want coördination; I believe most of us have wanted it sincerely for a long time. But when it has come to the point of taking the lead and bringing about coördination, too many have assumed the attitude of an advertisement by a certain wet wash laundry which came to a city where such things were unknown. The promoters, in order to attract attention, inserted an advertisement across the entire page of a local paper, which read: "The Wet Wash

Laundry of Brownsville. Why kill your wife? Let the Wet Wash Laundry do the dirty work."

WHY THE COUNCIL WAS FORMED

The reason the National Child Health Council was organized was that several national agencies engaged in health work for children felt there must be coördination in their own work. They knew that many suggestions and plans for coördination had been outlined but believed that the test of working together had not yet been made. Instead of con-

ducting a widespread educational campaign which might bring together a large and perhaps heterogeneous group of agencies, they came together as a small and harmonious group, actually to plan and work together and to see whether from such practical experience other developments would not come. The organizations which thus came together early last year to form the National Child Health Council were the American Child Hygiene Association, the Child Health Organization of America and the National Child Labor Committee—three whose work is distinctly for children—and the American Red Cross, the National Organization for Public Health Nursing and the National Tuberculosis Association, whose work bears largely upon the health of children.

METHOD OF REPRESENTATION

The Council is formed very simply by two delegates from each of these organizations, one an executive and the other a board member. This double representation has been thought most desirable so that the points of view of both the administrative staffs and the governing boards of the organizations may contribute to the policies and decisions of the Council.

CHILDREN'S LEGISLATION AN EARLY PROBLEM

One of the first things which came to the attention of the Council was a request from the National Child Labor Committee which illustrated a problem that the Council has attempted to study and to find a solution for. The Child Labor Committee pointed out that in many states of the Union there were official or unofficial child welfare commissions or committees which were considering legislation of all sorts for children. Most of them were thinking primarily in terms of the dependent, defective, or delinquent child. They were not thinking of the facilities which the state or community should provide in order

that the normal child might have a sound and healthful development. Some one had to take the lead in stating what legislation would best meet the neglected problems of health.

SERVICE TO "CHILDREN'S CODE COMMISSIONS"

This was in December and some of the official "children's code" or welfare commissions were to report in January. As an emergency measure the Council organized a committee which included representatives of the following federal bureaus: the Public Health Service, the Children's Bureau, and the Bureau of Education, as well as others who had special knowledge or skill to contribute to the subject of health legislation for children. After several meetings the Committee submitted a report which outlined the general principles of legislation which would protect the health of the child, give the necessary authority and powers to local and state health officers, and so far as possible clear the way for the granting of the necessary funds for a comprehensive program for the health of children. This outline appeared to meet a real demand as we found from the number of requests for it. It convinced us that the principle of establishing representative national advisory committees on various phases of the child health problem, which had been suggested as one of the functions of the Council, was sound.

ADVISORY COMMITTEES—SCHOOL HEALTH

We found that we were receiving from all over the country requests to know whether this or that measure was a desirable part of a program for the health education of school children or requests for an outline of a complete program. The Council has felt it its duty to answer these requests. Because it is organized as a coördinating body, the Council does not consider itself a group of experts. It believes, however, that its machinery should be at the service not only of its

member organizations but of all in the child health field for collecting and studying and making available the best information and the most authoritative opinion on the subjects that contribute to healthful childhood, especially in so far as the results of actual experience are obtainable. The best way of accomplishing this has seemed to be through the formation of national advisory committees. In the case of the advisory committee on health education of school children, the Council has appealed to those organizations consisting of professional groups with special knowledge of the subject, whether from the health or educational standpoint, to name delegates to such a committee. It has appealed also to the Bureau of Education, the Public Health Service, and the Children's Bureau to appoint representatives. In addition individuals of outstanding ability in the field of health education have been chosen to contribute to the formation of a well-balanced and authoritative committee. The advisory committee on foods and nutrition has been formed in a similar way, and both committees are ready to begin active work. Other advisory committees will be formed as the occasion arises.

THE NEED FOR TAKING STOCK

Many programs for the health of children, along specialized lines, have been invaluable in pioneering and experimentation. On the other hand most of them have been carried far enough for it to be possible to judge what their contribution should be to a complete program. Also there is danger in carrying these programs to a too high degree of specialization.

It is the hope of the Council not that these committees will outline entirely new programs dealing with health education of school children, foods and nutrition, and other subjects, but that they will gather together the best information available and will fit the results of differing experiences into a complete program

which shall be well balanced and experimentally sound.

LITERATURE

The member organizations of the Council have also joined in the consideration of the subject of literature dealing with child health. As a result they have already reported to the Council all of such literature which they have issued so far. This was accompanied by a list of recommendations as to what other literature was needed for use in the field and was not available. In addition each of the six organizations has agreed to report in advance to the Council any plans for issuing literature, so as to give opportunity for discussion, which may avoid duplication and lead to the best methods of meeting the demands of child health workers.

Some thought is being given also to desirable ways of improving present methods of exchanging information among the member organizations and others concerning interesting items in current literature and publications. In one instance already an important periodical digest of current child health literature has been brought to the attention of a large group which was not familiar with it. The preparation of bibliographies of literature on different phases of the child health problem is a matter to which the Council will give consideration. It may be handled through the appropriate advisory committees and also through the member organizations.

THE CHILD HEALTH DEMONSTRATION

One of the Council's plans which has interested many has been that for a demonstration, in coöperation with some community, of a well-rounded program for the health of children. An appropriation of \$200,000 has been designated for that purpose by the Red Cross, to be expended and administered by the Council. The Council has wanted to avoid either imposing a health plan on such a community or carrying out the health work

for children under such abnormally favorable conditions that the community could not continue it or other communities could not copy it. Consequently it is searching for a community which wishes to work out such a program in coöperation with the Council and which feels competent to carry on such work as proves sound, after the advice and assistance of the Council are discontinued.*

In order that this demonstration may be of the greatest benefit to the country as a whole, the Council has drawn up certain qualifications to guide it in the selection of a city and county, in addition to the population requirement that the city should have approximately 20,000 to 30,000 population and the county preferably between 50,000 and 60,000. The chief purpose of the other qualifications is to insure the selection of a place where the residents and their living and working conditions shall be sufficiently near the average so that the methods developed there may be applicable elsewhere. For example, if the community had a large percentage of immigrants of a certain stock with a high infant mortality rate, the health program necessary to meet their problems might vary considerably from one required for a more nearly normal population. Similarly the industrial life and other factors which affect living conditions and health should not be strikingly abnormal.

It is hoped that by the selection of a community whose conditions approximate the average conditions of American life, and which has the will to carry on the work developed during the demonstration, the greatest contribution may be made to the rest of the country.

COÖRDINATION OF FIELD WORK

In planning for coördination of field work we have recognized that we are dealing with one of the most difficult and at the same time one of the most im-

portant problems facing national organizations. I can say without reservation that the prevailing feeling is that we shall approach the whole question primarily from the point of view of the community and of the state, rather than from the point of view of the national organization. Those who have had experience in administering public health work realize the difficulties that the state or local health officer has in deciding what organization can render the most service locally and under what conditions such service is most helpful. It is upon those representing the community or the state that the responsibility falls sooner or later for adjusting the relationships of those outside the state to those within it.

Another consideration has been the varying conditions in different communities. It would be impracticable to attempt to develop a program, certainly one which had not been tested experimentally, which would be applicable uniformly over the country. There are not only varying conditions and varying types of organizations in different states, but associations which nominally have the same purpose may really have widely differing functions according to the lines along which they have developed in each state. Therefore it seems to the Council best not to work out a theoretical plan for the coördination of field work but to develop a practical one, step by step.

THE EXPERIMENTAL METHOD

The first step will probably follow the request of some one community, with the concurrence of the state authorities, for a study of its child health problems. This would give an appropriate opportunity for a joint study by the organizations in the child health field. Such a study can show: (1) how far it is possible for the agent of one organization to represent the others in bringing their resources to the service of the community; (2) to what extent the various programs of national organizations can be fitted into a comprehensive and balanced program for

*Since this paper was presented, the Council has announced the choice of Mansfield and Richland County, Ohio, as the scene of the proposed community experiment.

a community; (3) what are the standards and methods as to which there is not agreement among the leaders in the child health field, and which need to be brought to the attention of the appropriate national advisory committees for a consensus of authoritative opinion, or which may be legitimate subjects of further experimentation.

Perhaps the next logical step to take would be to lend a representative of one of the member organizations of the Council to one of the states for a period of from one to several months. Such a person, representing all of the organizations in the Council, and coöperating closely with the state authorities, might make a test of how far the principles which had appeared to be sound in the joint community study, could be applied in bringing the resources of these organizations to the service of an entire state. This experience should throw much light on the best methods of avoiding duplication, overlapping or the influencing of local programs without adequate knowledge of local conditions. From these steps there should develop methods of working out the best relationships with the states, which shall not only

make the best use of national child health resources but which shall contribute most toward the development of coördination on a state basis, which shall be built soundly and in accordance with the desires and needs of the state itself.

RELATION TO OTHER NATIONAL ORGANIZATIONS

Among other things, the Council has been very glad to take part, as a constituent member, in the affairs of the National Health Council. It has participated in the deliberations of the American Country Life Association on coördination in rural work. Its delegates have taken part in the conference of national social agencies and its discussion of plans for coördination of national social work. Conferences have been held with representatives of the Child Welfare League of America with a view to coöperating with that organization.

These steps have been for the purpose of carrying out a settled policy of the Council, not only to coöperate to the fullest extent with any existing organization but to work as far as possible toward the simplification of national machinery, rather than its multiplication.



CO-ORDINATION OF PUBLIC HEALTH ACTIVITIES

PHILIP KING BROWN, M. D.,
San Francisco, Cal.

Read before the Sociological Section, American Public Health Association, at San Francisco, Cal.,
September 15, 1920.

“IT is useless, even if it were desired, to attempt to oppose the inevitable and desirable trend toward a vastly increased utilization by the state of medical science in the interests of humanity.” This warning of Sir Arthur Newsholme is in the nature of a prophecy too little heeded by the busy physician, and too likely to be used for exploitation purposes by social reformers. To the historian of medicine such a prophecy is merely a mathematical calculation based on a

definite curve of progress, a curve varying with the influence of education, economics, and social welfare.

In utilizing this opportunity to interpret in a somewhat new and possibly radical way, the significance of the direction and extent of medical progress, I am conscious of taking issue with the reformers who see in Newsholme's words “the unanswerable argument” for social insurance, state medicine and other innovations. I would state the

issue this way, using Sir James Mackenzie's words regarding the future of medicine: "If a problem is to be solved, the nature of the problem and its difficulties should first be comprehended."

It is not free medicine or cheap medicine that the great body of small wage-earners want, but better medicines, a better understanding of the nature and difficulties of the problem. The want of it is not confined to the small wage-earner, but applies to every individual suffering from disease and so situated that not all the accessory means of study of the disease and diagnosis are available. Medical or surgical care would be more clearly indicated, more frequently sought, and more simply and economically administered if we were always reasonably sure of diagnosis. Under our present system and any system of state medicine thus far evolved in any country the hope of comprehending the nature of the problem and its difficulties vanishes. Too often adequate diagnosis is left until too late, and the allurements of patent medicines and quackery continue. Sir James Mackenzie has pointed this out in his *Future of Medicine*. "There is an impression," he says, "that disease is now recognized at the earliest possible stage at which it is humanly possible to recognize it. This view is not justified." When one compares the diagnosis made from physicians' records of cases attended with the list of diseases causing death, "it can be inferred that the diseases that weaken the community are not those of which the people die." Neither etiology nor early symptoms are sufficiently appreciated, nor causal factors and interrelation understood. A few months ago, this same author, as one of the committee appointed to study the question, reporting on the standardization of records and diagnosis by panel physicians in England, said that no diagnosis could be made in 85 per cent of the cases thus handled, since there was no evidence ob-

tainable that physicians were treating anything but symptoms. Health insurance in England, in other words, has resulted in the poorest possible practice of medicine in 85 per cent of cases, all because "the nature of the problem and its difficulties were not first comprehended." This criticism applies so generally to institutionalized medical work that any betterment of conditions along lines of state medicine thus far laid down seems utterly futile, and one naturally asks if the problem has not some other and better avenue of approach. Why not consider the plan of making possible by every means of state aid the nature and difficulty of each medical problem and trust to the highly educational value of such knowledge to make not only cheaper but better medical practice? If consultation, laboratory study, and refinement of understanding were available without cost to the poor, to physicians who could not provide them for want of time or money, and to institutions who have the problems of the dependent and sick to meet, could we not look forward to a growingly better understanding of the nature of disease on the part of physicians, and an appreciation of causes and consequences on the part of the laity?

By way of illustration, let us analyze some common examples which involve medical, social, economic and public-health problems. A man afflicted with a chronic cough is requested by his employer, who suspects tuberculosis, to consult his physician and secure from him a certificate of health so that the employer may be protected from complaints of the other employees. The patient goes to his doctor, belittles his troubles, gets a cough mixture and the certificate without the formality of an examination. A really satisfactory investigation of the nature of the cough might easily demand a careful history of the case, involve sputum examination, x-ray plates, and a study of daily temperature variations, but the doctor hesitates to impose this procedure on the father of a

family whose salary is small. In two months a child of the family dies of tubercular meningitis. The cough persists, and another certificate is demanded and is forthcoming. In this actual case, a second child dies before the father is obliged to give up his work for a few weeks in which to "build up." He does not build up, the reserve fund, depleted by two funerals, soon goes, and a clinic doctor makes a diagnosis of tuberculosis of the lungs and refers the case to a charitable organization. Here comes the second tangle in the situation, due to inadequate data about the whole nature of the problem and the failure to comprehend its difficulties. Already we have seen where sentiment was shortsighted and led to the bad medical advice and unnecessary deaths. The public-health problem was not appreciated and the economic waste was far greater than if the whole family had been supported in the beginning until the father could safely return to work.

Now that actual want forces the social aspect of the case to the front, a charitable organization takes up the problem and sends the man to Arizona in the hope of cure, in the meantime supporting the family. To make a long story short, over \$2,000 is expended on the case before the man dies some two years later, and only toward the end does the charitable agency find out that according to expert opinion on record at the clinic the man had no chance of recovery when first he applied to them for help. Two years were wasted in getting started on an economic solution to the problem and most of the \$2,000 cost was an equally useless expenditure. It is highly probable that could the man's physical condition have been ascertained in the first instance, or had he known that he was entitled to a diagnosis of his condition by the state, no matter how involved the problem, he might have been wise enough to attempt a cure while there was still time.

An example of a public-health and

medical problem of a wholly different sort will likewise show graphically how far from comprehensive are some of the present attempts at solution by state. Feeble-minded youths and girls who become sufficiently anti-social are committed to state institutions until they reach a certain age. They are subjected to considerable training and many of them become, temporarily at least, relatively social. When they reach the age at which time the state no longer will care for them, they are returned to their homes or placed out under some supervision from a visitor. Doubtless some of them "make good," but when murder, arson and rape mark the tracks of some of the boys, and innumerable illegitimate children, a majority of whom are feeble-minded, are the products of some of the girls, one wonders at the wholly inadequate solution of this immense problem to which attention was called many decades ago by Oscar McCollough in his story of the Ishmaelite, wherein he traced the five generations of one feeble-minded immigrant and showed the fact that various state institutions were expending \$84,000 a year on the dependent descendants of this one man. Certainly the state's effort for the feeble-minded is based on bad economic and inadequate medical understanding.

Examples of the poor coördination among public-health agencies might be multiplied endlessly. It is simply my purpose to point out that the trouble lies first of all with the wrong efforts to supply more general medical care to the community, when what it needs is ing; and, secondly, that the vast horde ing, and, secondly, that the vast horde of organizations doing public-health work represent an amount of overlapping that is very expensive and also productive of friction and defeated purpose. The accompanying chart will illustrate the dangers, a few of which only need be mentioned.

PUBLIC HEALTH

FEDERAL AGENCIES	STATE AGENCIES	CHARITABLE AGENCIES	MUNICIPAL AND COUNTY INSTITUTIONS	VOLUNTARY HEALTH ORGANIZATIONS
U. S. Public Health Service	Care of Insane	Cal. Tuberculosis Association	Sanatoria for Tuberculosis	Local Medical Societies
Division of Child Hygiene	Care of Feeble Minded	Child welfare	Hospitals for Tuberculosis	County Medical Societies
Division of Venereal Diseases, etc.	Prison Commission	Cal. Child Welfare	Hospitals for insane	State Medical Societies
Quarantine	Subsidies of tuberculosis sanatoria	Mental Hygiene Society	General Hospitals	League for Conservation of Public Health
Department of Labor	Laboratories	Association for the Blind	Poor Farms, etc.	Industrial Accident Commission
Children's Bureau	Board of Health	Cancer Research	Laboratories	Civic and Public Health
Department of the Interior	Board of Education	Preventoria		Division of Cal. Federation of Women's Clubs
Bureau of Education	(Medical examination in public schools)	Social Workers' Alliance		
	Board of Charities and Corrections	State Conference of Charities		
		Public health Nurses		
		American Red Cross		
		Hospitals endowed in full or part		
		Clinics endowed in full or part		
		Orphan asylums		

WHAT THESE SHOULD HAVE IN COMMON

1. A coördinated plan for preventing sickness and injury, and handling the sick and handicapped.
2. Doctors.
3. Nurses, Social Workers and office force.
4. Properly centralized supervision to prevent overlapping, to support and encourage necessary extension, and handle all educational work.
5. Adequate buildings.

There are three federal agencies struggling to control the child welfare work, three state boards in California dividing it, and innumerable charitable agencies undertaking special lines of the work. The Division of Child Hygiene in the Public Health Service naturally wants its hands on the Children's Bureau in the Department of Labor, and the Department of Education is quite sure that the social-hygiene problem is reason enough to give it full control of the work. Our State Board of Education conducts the medical examinations in public schools and has gone so far as to suggest having nurses pass on heart and lung conditions. Meanwhile the Board of Charities and Correction looks longingly to the time when it can assume control of the helpless child. Public health nurses have sought to put through state legislation giving them medical prerogatives on a par with physicians in the conduct of certain institutional work with children.

The economic gain of having all educational propaganda and information handled by one office needs no comment. The economic loss of duplication is in many ways quite as serious a problem, and one phase of it is coming home with force to agencies working in the field of tuberculosis. The more we understand of the need of prevention of tuberculosis the nearer we come to the problem of child welfare and the prevention of childhood infections so often the basis of the active disease of young adults. Recently the National Tuberculosis Association launched a huge and expensive experiment in child hygiene in the form of the "Modern Health Crusaders." This was well conceived, and well worked out, and has afforded a most successful and popular means of teaching children better hygiene; but it belongs to child welfare, and its continuance and growth under the administration of the National Tuberculosis Association threatens to swamp the Association financially or seriously curtail its specific work. It is not contended that all the fields of public health can be

made to fit like mosaic figures and not overlap, but it is very definitely stated that when overlapping threatens, an immediate agreement should be reached whereby the field of operation is not twice covered. Where anti-tuberculosis work is well organized and no child welfare work is being carried on, some properly constituted authority should see that the organization in the field is used for any and all public-health work that it can do. Treating tuberculosis, as Allen Williams has well said, is made up of treating all conditions and ailments of a patient which may in any way impair strength. There is a decided difference between this and spending constructive energy and money in a limited field that would rapidly lead to losing sight of the original problem.

In another form this economic loss is even better shown. The American Red Cross, whose organization in the war emergency was one of the truly great achievements of American patriotism in service and devotion to the cause of humanity, has sought to perpetuate its organization and has cast about for opportunity to assist in the public-health cause. For a time great hardship was experienced in many parts of the country by the call for nurses for American Red Cross work when there was an absolute shortage of nurses for the care of the sick all over the country. This was certainly lack of team-work, and it will continue to be so again and again until the Red Cross gives up being a free lance and becomes a coördinated part of the public-health work. So serious is this whole matter and in so unfortunate a way is it being administered in places where its activities are already covered by public-health organizations that the question is fairly before us today as to whether the time for a survey of the whole situation is not at hand. In connection with the criticism of so important an organization as the Red Cross and with the full appreciation of the need of its continuance in

some useful field of public-health work, it would seem self-evident that its chief usefulness should lie in coöperation rather than creation. So also the National Tuberculosis Association must study its problem and its future as part of a whole. It is today the best organized, largest, and most influential public-health body in America, and we can but hope that its very efficiency will be the means of gradually reducing its specific problem year by year until the problem becomes practically insignificant,

leaving the organization in the position of the Red Cross after the war, with a natural desire to "carry on," but with no adequate program for the expenditure of its highly trained forces. Were all of these agencies so organized and coördinated as special committees of a central public health body in each state, and responsible to a national organization, it seems fair to assume that the work could go on with a vast saving of money and effort and a uniform effectiveness not now possible.



SACRAMENTO WATER SUPPLY

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Bacteriologist, Sacramento, Cal.

Read before Laboratory Section, American Public Health Association, at San Francisco, Cal., September 16, 1920.

THE Sacramento River has furnished the main water supply for Sacramento City since 1850, when the city was founded. This river drains the north valley of interior California, and its tributaries come from the Sierra Nevada mountains from Sacramento north to the Oregon line, draining an area of 23,400 square miles. In the early days the water was clear, bright, and probably hygienically safe, and because of its abundance and softness was a thoroughly satisfactory supply. At that time the territory above the city was sparsely settled, there being about 3.7 inhabitants per square mile. At the present time the population is at least double this figure. The river was free from sewage contamination for there were no sewerage disposal systems. The population was entirely rural. This makes a comparison of inhabitants per square mile of small import from a sanitary standpoint. Another factor having influence at this time is that the drainage area of the Sacramento is the playground for many thousands during the summer months, wastes being deposited

along the banks of the streams only to be washed down by the first rain.

Sacramento was the first city in California to develop a water works system as a public enterprise. In 1852 the town was largely destroyed by fire, and two years previously there had been a frightful epidemic of cholera. During this period there were two rival companies that pumped water from the river into wooden tanks from which it was peddled to the citizens by means of carts. A water works system was urgently needed, was immediately begun, and completed in 1854.

These works became inadequate, and in 1873, after much agitation, the direct pumping system was introduced. This system is in use at the present time and has given entire satisfaction.

With the advent of hydraulic mining which was principally carried on above the city, the water became very turbid and today turbidity varies between 20 and 1,000. The mining caused enormous quantities of earth to be carried down by the streams, and now, forty years after this type of mining has been prohibited

by state law, there is a deposit of hundreds of millions of cubic yards of sediment in the river beds. The lowlands are protected by extensive levees. Extensive agriculture and deforestation contribute their share to the present turbidity.

Before the water works were completed a private company attempted to bore an artesian well. Repeated attempts followed, one well reaching a depth of 2,147 feet, but all failed. Likewise attempts to secure water filtered from the river bed failed because of an impervious layer of clay.

Typhoid fever has been ever-present in Sacramento and the surrounding country. During the eleven years from 1904 to 1915, it is estimated that there were nearly 3,000 cases, with 272 deaths. In the month of February, 1915, there were twenty-seven cases reported to the Health Office. The average death rate for typhoid in the years 1891 to 1914 was 53.5 per 100,000, with a maximum rate of 92.96 in 1898. Since 1915, when a chlorination plant was installed, there have been but nine cases traced to the water supply. During all of this time there have been the usual number of cases in the surrounding territory.

In 1914 growing of rice was begun in the Sacramento Valley. Its production was very successful and the acreage has increased rapidly until it is estimated that there were 200,000 acres planted in this valley above Sacramento this year.

It is well known that during the growth of rice it is necessary to have several inches of water covering the land. The water is carried in ditches from the Sacramento and its tributaries to the fields. Some is secured from wells. A few weeks before the rice is harvested the water is pumped from the land into canals which carry it back to the river. During the summer considerable water finds its way back to the river as drainage. All this happens above the city and materially changes the com-

position of the water besides lowering the river. Considerable water is lost by evaporation, due to the large surface exposed to the hot sun and excessively low humidity prevailing during these months. The water is very soft ordinarily, but during the present year, because of a light rainfall for several years and the drainage water mentioned above, the alkalinity has increased four times, and the chlorine content has increased from an average of 8.7 to 124 parts per million.

The extremely low state of the river during the present year has been a source of considerable worry to the Health Department. At extreme low tide the surface of the river at Sacramento has been slightly below mean sea level. The daily tide range is two to three feet. This has produced a reversal of current which extends about five miles above the city intake. The city discharges its sewage raw into the river one mile below the intake, and with continuous pumping there was a period of about an hour at high tide when the sewage was carried above the intake. This condition was discovered by investigations carried on by the State Bureau of Sanitary Engineering at the suggestion of the local health authorities. The remedy was an intermittent pumping schedule. The pumps are started three hours before high tide and shut down three hours before low tide. It was found that by a safe margin this sewage did not reach the city intake.

The current has been very sluggish at all times and a considerable growth of algae has occurred.

For the future, we can say that bonds have been carried for a filtration plant which we believe will again give us a satisfactory and safe supply.

In conclusion, attention is again called to the marked changes that have occurred in a large river during seventy years. First the water was pure, brilliant and abundant. This has gradually

become contaminated because of increase of population in the watershed, by excessive turbidity arising from mining, and, finally, by the changes brought about by

the new agricultural products and methods. The reduction in typhoid fever by chlorination is not peculiar to Sacramento.



NATIONAL HEALTH COUNCIL LAUNCHES ROTARY HEALTH WEEK

DONALD B. ARMSTRONG, M. D.

Executive Officer, National Health Council

AT the request of the International Association of Rotary Clubs, the National Health Council has inaugurated plans for a health week, December 5 to 11, 1921. The Council will be aided in launching this health week by its various member organizations. This plan is for each community to organize its own committee for this health week, drawing upon the established health and welfare agencies for its health committee members, under the leadership of a Rotarian.

The plan, which has been approved by the International Association of Rotary Clubs, calls for a year's program, with one activity to be featured each day. Any one community may use as much of the suggestions submitted as is feasible. Smaller communities will probably not use more than perhaps half of the proposed program, and communities in which a large and active committee is selected may put into effect the entire schedule.

The activities or community chores which have been proposed include in all cases the initiation of health week by a luncheon of the Rotary Club, followed by a discussion of the community's health. This will be directed by the local committee and will include special reference to such local problems as water supply, sewage disposal, milk and food control, tuberculosis, venereal diseases, and other problems that may be of special significance to that particular community.

Plans of the coöperating committee for health week will also be heard.

All Rotary Clubs meet one day in the week, and it has therefore been suggested to the clubs that they initiate the week with the day of their luncheon and call that the first day of their health week. The program for a typical community which began its week on a Monday would read as follows:

MONDAY, December 5.—ROTARY HEALTH DAY. Club luncheon; activities as discussed above.

TUESDAY, December 6.—HEALTH APPRAISAL DAY. A special sub-committee, possibly headed by the Health Official may appraise the community's equipment for disease prevention and health maintenance. Investigations may be made of specific disease conditions or the sanitary conditions of certain neighborhoods.

WEDNESDAY, December 7.—EXAMINATION DAY. The coöperating committee will urge voluntary medical and dental examination of all citizens either by their own physician or in emergency diagnostic clinics temporarily set up for this purpose.

THURSDAY, December 8.—SCHOOL HEALTH DAY. A greater part of the school schedule during the week will be devoted to the teaching of health and personal hygiene, and teachers will be furnished with literature and a uniform program of health lessons which will be prepared by the committee. The National Health Council has asked its members and affiliated local organizations to coöperate with the Health Week Committee by providing the literature as far as possible.

FRIDAY, December 9.—PUBLIC EDUCATION DAY. A mass-meeting will be arranged where the committee will have an opportunity to report its findings on the sanitary conditions of the community. Health films may be shown and literature distributed.

Health displays in the windows should be

set up, and advertising space for carrying health lessons arranged for.

SATURDAY, December 10.—HEALTH FIELD DAY. For this day competitive games and out-door contests by Boy Scouts and other organizations may be suggested by the committee. On this day also the school pageants which may have been presented on School Health Day (Thursday) may be repeated, preferably out-doors where the weather permits.

SUNDAY, December 11.—HEALTH SUNDAY. A special committee should be appointed to arrange health talks in the churches by doctors, health organization representatives, etc. Outlines of such talks may be secured from the local health agencies. Notices may be read from the pulpits. The subjects which have been suggested for these talks include the following:

Infant Welfare, Child Welfare, Home Hygiene, Personal Hygiene, The Hygiene of the Working Environment, General Community Health, School Hygiene.

In those communities in which an energetic committee is selected, additional and more ambitious chores may be included. The activities which can be carried on by these committees include four-minute talks in theaters, motion-picture houses and other public meetings. The committee may also arrange to secure public-health films to be run in addition to the regular showings. Films may be obtained from the State Board of Health, State Tuberculosis Association, the director of health service of the American Red Cross, and other national volunteer health agencies.

The shoe man can emphasize the merits of common sense shoes for children and grown-ups, the hardware man can bring out the value of seeking good ventilation when purchasing a furnace, the plumber the merits of sanitary plumbing, the electrical fixture man can point out the need of proper lighting. The dry goods merchant may show the hygienic features of various kinds of clothing, underwear, etc., and the grocer may bring to the fore the sanitary care with which the packages sold in his establishment are wrapped, or their nutritive values.

The above leverages that may be applied in order to insure self-motivating activities will probably be effected where the local merchant can be shown how to inject sales points into his advertising, making the tie-up with health and the Health Week.

The value of talking health, thinking health, advertising health, urging health, writing health, and pleading for health can result in only one thing—practicing health by the communities. To what extent health habits will be initiated and to what extent gains will have been made by the impetus thus imparted will probably never be accurately measured, but certain it is that the movement will be forward, toward better health.



THE RECORD OF A YEAR'S RED CROSS ACCOMPLISHMENT

The report of the American Red Cross for the fiscal year ending June 30, 1921, is a record of splendid accomplishment in the field of public health. There are 260 chapters in which health centers are established:

Health lectures given in such centers.....	4,015
Health exhibits held in such centers.....	780
Clinics held in such centers	6,264
Persons attending clinics.....	90,252

The Red Cross Nursing Service is the reserve from which Army and Navy nurses are recruited in time of war. There are 37,787 nurses now registered. Last year there were 257 nurses assigned to the Army, 131 to the Navy, 1,163 to the U. S. Public Health Service, and 3,243 employed by the

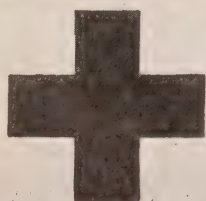
Red Cross. Of these, 1,335 are employed as public health nurses by the chapters, and they made during the year 1,144,692 visits to patients, examined half a million school children and nursed 499,800 patients.

The Red Cross furnished last year 1,726 instructors in classes on home hygiene and care of the sick, 883 of which were given; 258,710 students were enrolled and 86,570 certificates granted.

The army of the disabled keeps growing



In Hospitals under Government care



The Red Cross is spending
Ten Million Dollars a Year
to help the ex-service man
and his family —

Annual Roll Call • Nov. 11-24, 1921

The Nutrition Service of the Red Cross is being developed in response to the general awakening to the need for more intelligent application of the principle of nutrition to every-day life. Physicians' examinations have shown that twenty per cent of the school children of this country are below normal weight. To aid in meeting this situation three chapter activities have been developed: nutrition classes for undernourished children, hot lunches for schools, and a course in food selection for mothers. The service has enrolled up to date, 2,514 trained home economics teachers to carry on these activities. During the past year 22,006 undernourished children have been enrolled in 1,114 classes, and 163 classes in food selection have been organized, from which 1,587 women have been certificated.

The work of the Red Cross in first aid is too well known to need explaining. More than half a million railroad employees alone have taken the Red Cross course, and many large industrial and public service corporations, such as the Bell Telephone Company, have made it part of the training of their employees. Last year 5,100 classes were held, 20,172 persons certificated, and 104,495 students enrolled.

The most important work, however, that the Red Cross is undertaking, is the care of the disabled ex-service man. There are eight times as many of these men in hospitals to-day as there were in 1919, and more are reporting at the rate of 1,000 a month. Last year the 2,397 Red Cross chapters which still maintain active service for these men listed 1,550,580 cases of such service. Headquarters handled 148,032 allotment, insurance, and compensation claims, and located the owners of 63,655 allotment checks which had gone astray. There are 448 Red Cross workers in the hospitals where the ex-service men are under care. And last year the Red Cross loaned \$450,000 to 32,495 men under the Federal Board for Vocational Education.

Last year the Red Cross spent \$10,000,000 for disabled ex-service men alone. Yet it took in only \$6,000,000 in dollar membership dues. This year, during the Roll Call, November 11-24, the membership must be greatly increased if the work is to be continued and expanded to meet the need.



Health Center Defined.—There have been many and varied conceptions as to what is a health center. In an article in the *Nation's Health* for May, Dr. E. A. Peterson gives us his definition. He tells us that physically, it is a building, rooms, or room, centrally located in the community; functionally, it is an institution through which the community may get in touch with all health promoting agencies and with the health problems of local and of national importance. There are at the present time four great health forces operating in any community. They are: 1. the legally constituted authority, 2. the private practitioner, 3. the schools and 4. national and local private

health agencies. The health center is a point of contact between the community and these agencies, which, so far as authority is concerned, are operating independently. It is an institution for health education and supplements the work of the existing forces. In summing up, the author states that the health center is a community health organization standing for creative health work, which aims to coördinate the efforts of all health agencies, bring the services of all agencies to the attention of the public in such a way that they are used, and bring the community to demand, and stimulate the community to work for a higher and higher type of health service.—E. A. Peterson, M. D.—*Nation's Health*, May, 1921. (J. A. T.)

EDITORIAL SECTION

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THE PREVENTION OF ENDEMIC GOITER

It appears that a sufficient amount of time and study has been devoted to the prevention of simple or endemic goiter to warrant public-health officials in heeding the exhortations of Marine and Kimball in this country, and Klinger in Switzerland, and in taking certain steps looking toward the control and elimination of this "human scourge which has taken its toll in misery, suffering and death throughout all ages." America is only a mildly endemic country, but abroad, cretinism, deaf-mutism, and iodiocy mark its inheritance.

Whether goiter is purely a deficiency disease, resulting from lack of iodine in the diet, or whether it is a specific infection, is beside the point, since both schools acknowledge the action of iodine as a preventive and to a certain extent as a therapeutic agent.

Not only has the American investigation now covered over 10,000 school children in Akron, Cleveland, and Warren, Ohio, with carefully controlled groups, where goiter incidence is stated to be nearly 50 per cent in girls, but the same investigators and a number of biologists and animal husbandry men (Gaylord and Marsh, Welch, Hart and Steenbock, Kalkus) have extended the preventive treatment with iodine to many forms of lower life, especially fish and domestic animals over the past decade.

As a beginning, the Ohio State Department of Health has recommended to the body of its state health commissioners gathered at their second annual conference in Columbus in September, to make a survey of enlarged thyroids in the school children of the state in conjunction with the educational authori-

ties in school inspections, in order that the limits of the "goiter belt" may be at least defined. Preventive treatment may then follow.

Marine and Kimball (*Jour. Amer. Med. Assoc.*, Oct. 1, 1921, pp. 1068-1070):

To our knowledge, the prevention of human goiter was not attempted on any large or practical scale until 1917, when we began work with the school population of the city of Akron, although in Cleveland it had been strongly urged and had been used by some physicians for several years. Briefly, the method as applied to man consisted in the administration of 2 gm. of sodium iodid in 0.2 gm. doses, distributed over a period of two weeks, and repeated each autumn and spring. This amount of iodine is excessive, and far beyond the needs of the individual or of the ability of the thyroid to utilize and store it. One gram distributed over a longer period would be better. The form or mode of administration of iodine is of little consequence. The important thing is that iodine for thyroid effects should be given in exceedingly small amounts, and it is believed that most of the untoward effects recorded are due to the excessive doses employed, or, more concretely, to the abuse of iodine.

The results of our two and one half years' observations on school-girls in Akron are as follows: Of 2,190 pupils taking 2 gm. of sodium iodid twice yearly, only five have developed enlargement of the thyroid; while of 2,305 pupils not taking the prophylactic, 495 have developed thyroid enlargement. Of 1,182 pupils with thyroid enlargement at the first examination who took the prophylactic, 773 thyroids have decreased in size; while of 1,048 pupils with thyroid enlargement at the first examination who did not take the prophylactic, 145 thyroids have decreased in size. These figures demonstrate in a striking manner both the preventive and the curative effects. Klinger has recently (1921) reported even more striking curative results in the school children of the Zürich district. He worked with school populations in which the incidence of goiter varied from 82 to 95 per cent while our maximum incidence in Akron was 56 per cent. With such a high natural incidence of goiter, his observations necessarily deal more with the curative effects. Thus of 760 children, 90 per cent were goitrous at the first examination. After fifteen months' treatment with from 10 to 15 mg. of iodine weekly, only 28.3 per cent were goitrous, of a total of 643 children reexamined.

According to the War Department's report on *Defects Found in Drafted Men*, goiter has the greatest incidence in our northwestern, mountainous states. For instance, in young men from the state of Washington, 15 to 27 per thousand showed simple goiter, necessitating the dropping of over one-fourth from army service. In Washington, also, exophthalmic goiter (a disease which appears spontaneously only in man) existed to the extent of 0.9 per cent in this young men's age group. However, Marine and Kimball disclaim any "necessary association of etiologic relationship" between these two forms of goiter. As goiter is usually considered to be six times as prevalent in females as males it can be seen that these Army findings are very significant. The report also emphasizes the usual text-book dictum of the infrequency of goiter in maritime districts, the ratio standing as 1.02 to 17.55 when sea-coast dwellers are compared to dwellers in mountainous regions. The presence of iodine in sea water, sea air, and sea foods is given as the most probable explanation, on the one hand, and the usual absence of iodine (Forbes and Beegle, Bohn, Winterstein, and others) in inland food supplies, on the other hand. Kalkus, in Washington, found the soils of goitrous districts to contain only the merest trace of iodine (.0015 per cent or 1.5 parts per million), whereas "deer lick soils," which wild animals seek for "licks," showed over twenty times as much iodine (.032 per cent or 32 parts per million).

THE RED CROSS ROLL CALL

From Armistice Day to Thanksgiving there will be seen in the towns and villages of this country, booths established for the purpose of enrolling and re-enrolling members in the American Red Cross. A little over two years ago this organization announced that its enormous machine of organized service would direct its major efforts toward the problem of public health. The principal lines of endeavor were to be the extension of the public health nursing service, the development of health centers and coöperation with all health agencies, public and private, to the end that coördinated effort might more quickly and surely bring about the results for which all were striving.

Two years ago the Red Cross public-health nurse was already a familiar figure in many communities, but the scant two hundred nurses that were in service at that time were but pioneers of a great movement. In community after community the influenza epidemic taught the lesson of public-health preparedness, and one after another of these communities, inspired by their war efforts to greater deeds of service than they had ever before known, demanded nurses to give expression to their will. Now there are between 1,300 and 1,400 Red Cross nurses serving 1,200 communities, and the demand for them is still not entirely met.

The Red Cross saw in the health center a desirable means whereby it might coördinate its efforts with those of the health officer and with those of other organizations similarly devoted to the physical betterment of human beings. In 1919, the best estimate indicated the existence of about 90 health centers. Most of these were located in or near to large cities where public health administration was already well advanced. On June 30, 1921, the Statistical Service of the Red Cross had record of 249 health centers in all parts of the country and at the present time there are known to be at least one-half again as many as this.

The thrill of working shoulder to shoulder with others has not been, however, enjoyed alone by Red Cross chapters. Nationally the Red Cross has been privileged to aid other organizations. State health officers are well aware of the new Michigan plan of coöperation, which has done much to remove the friction and misunderstanding that at first developed. This plan is now in successful operation in five states, and certain state health departments are being assisted in other ways.

The most remarkable examples of recent coöperative endeavor are the National Child Health Council and the National Health Council. It is the Red Cross which has made them possible, bearing as it does a large proportion of the burden of administrative expense. They have both become going concerns in a very short space of time. Coördination without absorption, coöperation without misunderstanding, service for all the needy, striving always for the physical betterment of mankind,—these are the ideals and principles that animate this organization of eight million people.

ASSOCIATION NEWS

THE STEPHEN SMITH MEDALLION

The bronze medal bearing the portrait of Dr. Stephen Smith and designed as a memorial of the Semicentennial meetings of the American Public Health Association, will be treasured by thousands of members of this Association during future years, as a souvenir of the important events to take place in New York City during Health Fortnight, from November 8 to 19. Therefore, there is peculiar interest attached to an explanation by the sculptor, Michele Martino, of certain details of the design which he has made for this medal.



As to the little lamp at the left-hand side of the medallion, Mr. Martino pointed out that this is a common Greek symbol of the flame of knowledge, or science, and therefore particularly appropriate to the subject in hand.

The wreath, as will be noticed, is of ivy and laurel combined, the former standing for the long life of the subject and his immortality, the latter signifying the world's acclaim and appreciation.

"Kindness," to use the artist's words, "was Dr. Smith's outstanding character-

istic." "Who should be kind if not the physician?" he asked.

About the sculptor himself, here are a few facts: He was born in a little town about thirty miles from Naples. His home, a quaint, old-fashioned stone structure, located on a hill overlooking the Appenines, is still in the possession of his family. It is reached by a stage-coach, no railroad or electric being available.

Educated (during seven years) at the Yale School of Fine Arts, at Julien's in Paris, and by other European masters, Martino has been in the limelight much of late, through having made some of the grotesques—widely commented upon in the press—for St. Thomas' and St. Vincent's churches. Mr. Martino has little in common with the ultra-modernist movement in art. Nevertheless, his *Jeu de Faunes* found a place in the Independents' Exhibition last year, also in the Ferargil Galleries' Show, and at the Painting and Clay Club, in New Haven. Those artists who style themselves *revoltés* would call Mr. Martino decidedly old-fashioned — old-fashioned enough to admire and confess that he admires Raphael, Collini, Michelangelo, Phidias, Donatello, Della Robbia and St. Gaudens.

During the war, Mr. Martino was engaged in doing camouflage work at the Navy Yard at Washington. That is the only kind of camouflage that is, in his opinion, permissible. He is a stickler for truth, sincerity and spontaneity.

The medal will be on sale to members at the annual meeting at a moderate price. Every one will desire a copy as a permanent souvenir of the occasion, especially in view of the fact that its size, shape, and weight make it an ideal desk weight.

LIST OF NEW MEMBERS

Proposed for Election to the A. P. H. A. August 1 to August 31, inclusive.

Names of Sponsors are set in **Bold Face Type**.

Names of New Members are set in Light Face Type.

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Willard E. Ward, Agent for the Inspection of Milk, Animals & Provisions, Board of Health, Brookline, Mass.

Mr. Maurice Dinneen, Town Hall, Winchester, Mass. Full time Health Officer.

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Clarence Winchell, Jersey City, N. J.

Mr. Julius Klosterman, Jersey City, N. J. Technician Rockefeller Institute for Medical Research.

NEW YORK

Miss F. Constance Stewart, 113 State St., Albany, N. Y.

Miss Eleanor M. Humphreys, 113 State St., Albany, N. Y.

Albert F. Stevenson, 19 Circle Ave., Ridgewood, N. J.

Mr. Joseph N. Greene, 180 Jackson Ave., Pelham Manor, N. Y. Dir. Bureau Dairy Development, The Borden Co.

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Pearl Weaver, R. N., City Hall, Asheville, N. C.

Miss Dorothy E. Wallace, care French Broad Mfg. Co., Asheville, N. C.

PENNSYLVANIA

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Mrs. William Wister Comfort, Haverford College, Haverford, Pa. Member of the local Board of Health.

UTAH

Extension Service, Utah Agriculture College, Logan, Utah.

WISCONSIN

Dr. Hoyt Dearholt, Milwaukee.

E. S. Lodge, M. D., 521 Grand Ave., Milwaukee.

CANADA

Dr. F. B. Royer, Mass. Halifax Health Com., Halifax, N. S.

T. M. Sieniewicz, M. D., Mass. Halifax Health Com., Prov. Annex. No. 1, Halifax, N. S. Tuberculosis Examiner.

CANAL ZONE

Dr. D. P. Curry, Asst., Chief Health Officer, Panama Canal.

Mr. Eugene J. Bumiller, Box 499, Balboa, Canal Zone. Sanitary Inspector.



EMPLOYMENT BUREAU

HELP WANTED

Help wanted announcements will be carried free in this column until further notice. Copy goes to the printer on the 10th of each month for publication on the 20th. Mail to Boston office as early as possible.

In answering keyed advertisements, please mail replies separately to editorial office in Boston, Mass. In replying give age, professional training, salary requirements, previous positions held and three or more references.

Wanted: Two positions open in West Virginia cities for bacteriologists. Recent graduates may qualify. Salary \$1,500 at start, good opportunity. Send references and application to Division of Sanitary Engineering, West Virginia State Department of Health, Charleston, W. Va.

Wanted: Competent chemist and bacteriologist for city laboratory. Woman pre-

ferred. Salary at start \$1,200. Special water and milk work. State qualifications, references, etc. Apply to Mayor, Fairmont, West Virginia.

Wanted: A middle-western State Department of Health requires a full-time physician for its traveling tuberculosis clinic. Clinic spends week in each county. Consists of a children's unit and a tuberculosis unit. Only physicians with special training in tuberculosis work considered. Salary \$3,000 and expenses. Address 468, care this JOURNAL, New York address.

Wanted: Full-time resident physicians are required for Michigan in connection with this Department's supervision of penal and correctional institution medical work. Opportunities now for two men and for one woman physician. Salaries \$1,800-\$3,000 and maintenance. State age, nationality, married

or single, education, present employment, references. Personal interview preferred. Deputy Commissioner, Michigan Department of Health, Lansing, Mich.

Wanted: Full-time medical health officers for county health work in New Mexico, January 1, 1922. Salary, \$3,000 per annum, with allowance for transportation. Address State Director of Health, Box Y, Santa Fe, New Mexico.

POSITION WANTED

Positions wanted announcements will henceforth be carried in this column. The charge is \$2 per insertion. Copy should be received at this office by the 10th of the month.

Wanted: Physician of mature years and wide experience, excellent executive and good business man, wishes position as superintendent of health in large or middle-sized northern or western city, with well-organized and -equipped department. Salary not less than \$3,600. Best professional and business references. Address 176, G. M. R., care of this JOURNAL, New York address.

Wanted: Max J. Colton, formerly health officer of Cumberland, Maryland; later regional consultant, Division of Venereal Diseases, U. S. P. H. S., now connected with medical relief organization doing medi-

cal and sanitary work in Poland, desires an engagement, to take effect on or about January 1, 1922. Address 1422 Mayfield Street, Philadelphia, Pa.

Wanted: A physician holding degrees of M. D. and M. S. (P. H.) wants a position as administrator in public-health work. Has had considerable experience in tuberculosis, industrial and venereal work, child hygiene, general and tropical sanitation. Was connected with a State Department of Health. Speaks several languages.

Address 191, J. M. S., care this JOURNAL, New York address.

Wanted: Qualified sanitarian, recent graduate of Harvard-Technology School of Public Health, wants position. Experience in public-health work prior to taking C. P. H. degree. District health officer, northern Maine district, one year. Division director, Maine State Department of Health, two years, preceded by nineteen years of general medical and surgical practice, including years city dispensary service, four years medical inspector of schools and six years neurologist to Central Maine General Hospital. Best of references furnished. Now open to engagement.

Address 192, H. E. H., care this JOURNAL, New York address.

BOOKS AND REPORTS REVIEWED

Mouth Hygiene. A Text-Book for Dental Hygienists. *Compiled and Edited by Alfred C. Fones, D.D.S. Philadelphia and New York. Lea & Febiger, 1921. Second Edition, thoroughly revised, with 218 illustrations and 8 plates. Price, \$5.00.*

What first strikes the reader of this little volume is that so much scientific information could be put in so small a compass. Dr. Fones and his eight collaborators should be congratulated that they have condensed the very essence of modern dentistry into three hundred and twenty-six pages.

The reader cannot but agree with President Emeritus Eliot in that modern dentistry is applied biology. This fact is indicated on every page, the opening chapter, dealing as it does with the anatomy of the

head and the succeeding chapters treating of the histology of the teeth and associated structures, comparative dental anatomy and its relation to the human, malocclusion of the teeth, inflammation, deposits and accretions, pyorrhea alveolaris, dental caries, odontalgia and neuralgia, relation of oral infections to general health, dental prophylaxis; and last but not least, the work closes with a valuable section written by Dr. Fones himself and which he modestly terms the Appendix. This chapter crystallizes the life experience of this apostle of preventive dentistry in oral hygiene and in educating and training dental hygienists.

The only criticism the reviewer has to offer is that the Appendix should be put first, for it is an inspiring piece of writing and

should stimulate the student hygienist to put forth her best efforts in the mastery of her chosen calling, as the following quotation shows:

"It has long been realized that the dental profession was unable to cope with the universal need for mouth hygiene, the number of dentists available at any one time being always insufficient to supply even the need for good operative dentistry. With dental diseases and resultant systemic infections almost universal maladies, trained workers for maintaining mouth health can no longer be denied to a public sorely in need of such service. . . . Fortunately it does not require a graduate dentist to perform a prophylactic treatment of the teeth, or to teach mouth brushing, food habits and general hygiene. The present need of the dental profession, in solving the public health problem of mouth hygiene, is an immense corps of women workers, educated and trained as dental hygienists, and therefore competent to enter dental offices, infirmaries, public clinics, sanatoriums, factories and other private corporations, to care for the mouths of the millions of adults who need this educational service so urgently."

But after all, perhaps Dr. Fones is right in putting his contribution last, for to fully grasp the essential of what follows does require a scientific foundation.

The fact must not be lost sight of that this book is a compilation, and that each contributor is an eminent educator in his chosen field of work: Dr. Fones, professor of preventive dentistry at Columbia University; Arthur Hopewell-Smith, ScD., L.R.C.P., M.R.C.S., D.D.S., professor of dental histology in the University of Pennsylvania; Edward C. Kirk, D.D.S., ScD., L.L.D., editor of the *Dental Cosmos*; Arthur H. Merritt, D.D.S., specialist in periodontia; Leroy M. S. Miner, M.D., D.M.D., associate professor of dentology in Boston University School of Medicine; Rodrigues Ottolengui, M.D.S., D.D.S., L.L.D., editor of *Dental Items of Interest*; Robert H. W. Strang, M.D., D.D.S., specialist in orthodontia; Kurt H. Thoma, D.M.D., assistant professor of oral anatomy and pathology, Harvard University Dental School, and Charles R. Turner, M.D., D.D.S., dean of the School of Dentistry in the University of Pennsylvania.

Although this work is primarily for the dental hygienist, it is in reality a treasure chest of useful scientific knowledge which should serve eminently as collateral reading for the general student of dentistry, and is the one book on dentistry which should be put into the hands of every student of medicine.

L. W. B.



Jack O'Heath and Peg O'Joy. A Fairy Tale for Children. *Beatrice Slayton Herben, M. D. New York: Charles Scribner's Sons, 1921, Pp. 39.*

This attractive little book is published for the New York Tuberculosis Association in coöperation with the Board of Education of the city of New York and the Health Service, New York County Chapter, American Red Cross. There is a foreword by Annie Carroll Moore and excellent illustrations by Frederick Richardson. The jingles are by the school-children of Public School No. 15 of New York City.

"Peggy! Peggy! Come and play;

There's the sun and here's the day."

These two lines, which open the first chapter, save the reviewer much trouble, for they review the book for him. There is a glint of sunshine all through it; there is the spirit of play on every page; the day which dawns is the day of better health. What more could one ask of a fairy book for children?

J. A. T.



Handbook of Social Resources of the United States. *Genevieve P. Hendricks, Washington, D. C.: American Red Cross, 1921. Pp. 300 and lxx. Price, \$1.00.*

This book is a descriptive directory of national social service, health, and related agencies, both official and voluntary. There are included 371 main organizations and numerous subdivisions under main headings, as bureaus under government departments. The book contains an introduction, a subject index, an index by locality, and an encyclopedic directory of the national agencies, this last requiring 300 pages. The data on each organization includes name, date of incorporation, address, object and scope, functions, publications, membership qualifications, and amount of dues. The statements published have been officially approved by each of the organizations listed. All of the altruistic associations having an interest in public health work are included.

J. A. T.

PUBLIC HEALTH NOTES

Abstracts by D. GREENE, M. D., JAMES A. TOBEY and HOMER N. CALVER.

Public Health Service Institutes.—In view of the great success of the Institute of the Public Health Service held in Washington last December and of the difficulty, due to the conflicting dates of other meetings, of arranging for another on the same scale this fall or winter, the Service some time ago decided to try to meet the insistent nation-wide demand by arranging a series of institutes to be held in the larger widely scattered cities of the United States. Locations and dates were so arranged that at least two or three of the meetings should be held within reasonably convenient reach of nearly every resident of the country; and a tentative schedule of courses and of speakers was mapped out. The plans were promptly adopted by many cities, with some variations to meet special local needs.

In addition to the Health Institute of the A. P. H. A. Semicentennial, New York City, Nov. 8-12, cities and dates so far listed are as follows: Hot Springs, Ark., some date in November; New Orleans, La., and Columbia, S. C., Jan. 9-14; Dallas, Tex., and Birmingham, Ala., Jan. 16-21; Memphis, Jan. 23-28; Louisville, Jan. 30-Feb. 4; Indianapolis, Feb. 13-18; Pittsburgh, Feb. 20-25; Cleveland, Feb. 27-Mar. 4; Lansing, Mich., Mar. 6-11; Chicago, Mar. 13-18; Minneapolis, Mar. 20-25; Portland, Ore., and Kansas City, Kans., April 10-15; Spokane, Wash., and Newark, N. J., Apr. 17-22; Helena, Mont., and Albany, N. Y., Apr. 24-29; Denver, May 1-6; Washington, D. C., in late May. Some dates in the schedule remain vacant, and these are being rapidly allotted.

The institutes were planned to run for a week, and this length has been almost universally adopted. The basic courses include from three to six lectures on tuberculosis, child hygiene, nutrition, clinics and health centers, communicable diseases, non-communicable diseases, industrial hygiene, sanitary engineering, administrative problems, mental hygiene, medical social work, syphilis, gonorrhea, protective social work, and the delinquent. Single lectures will also be given on special occasions. Two institutes, those at Hot Springs and Chicago, will be devoted especially to venereal diseases.

National Board of Medical Examiners.—The National Board of Medical Examiners has just completed the first five years' work and with it the trial period of its usefulness. The principle which this Board has stood for, namely, the establishment of a thorough test of fitness to practice medicine which might safely be accepted throughout this country and abroad, has been widely adopted. Since this Board was organized by Dr. W. L. Rodman, in 1915, eleven examinations have been held. These examinations have been conducted on the plan of holding at one sitting, a written, practical and clinical test for candidates with certain qualifications, namely, a four-year high-school course, two years of college work, including one year of physics, chemistry and biology, graduation from a Class A Medical School and one year's internship in an acceptable hospital. These examinations have covered all the subjects of the medical school curriculum and have been conducted by members of the Board with members of the profession resident in the place of examination appointed to help them. Such examinations have been held in Washington, Philadelphia, New York City, Boston, Chicago, St. Louis, Rochester (Minnesota) and Minneapolis. During the war a combined examination was held at Fort Oglethorpe and Fort Riley. There have been 325 candidates examined, of whom 269 have passed and been granted certificates.

There has been such a widespread demand for an opportunity to secure this certificate by examination, that the Board has now adopted and will put into effect at once the following plan: Part I, to consist of a written examination in the six fundamental medical sciences: Anatomy, including histology and embryology; Physiology; Physiological Chemistry; General Pathology; Bacteriology; Materia Medica and Pharmacology. Part II, to consist of a written examination in the four following subjects: Medicine, including pediatrics, neuropsychiatry, and therapeutics; Surgery, including applied anatomy, surgical pathology and surgical specialties; Obstetrics and Gynecology; Public Health, including hygiene and medical jurisprudence. Part III, to consist of a practical examination in each of the follow-

ing four subjects: Clinical Medicine, including medical pathology, applied physiology, clinical chemistry, clinical microscopy and dermatology; Clinical Surgery, including applied anatomy, surgical pathology, operative surgery and the surgical specialties of the diseases of the eye, ear, nose and throat; Obstetrics and Gynecology; Public Health, including sanitary bacteriology and the communicable diseases.

Parts I and II will be conducted as written examinations in Class A Medical Schools and Part III will be entirely practical and clinical. In order to facilitate the carrying out of Part III, subsidiary boards will be appointed in the following cities: Boston, New York, Philadelphia, Minneapolis, Iowa City, San Francisco, Denver, New Orleans, Baltimore, Galveston, Cleveland, St. Louis, Chicago, Washington, D. C., and Nashville, and these boards will function under the direction of the National Board. A fee of \$25.00 for the first part, \$25.00 for the second part and \$50.00 for the third part will be charged. In order to help the Board, the Carnegie Foundation has appropriated \$100,000 over a period of five years.

At the annual meeting held June 13, 1921, in Boston, the following officers were elected: Surgeon General M. W. Ireland, president; J. S. Rodman, M. D., secretary-treasurer; E. S. Elwood, managing director.

Mr. Elwood will personally visit all Class A Schools during the college year to further explain the examination, etc., to those interested. Further information may be had from the Secretary-Treasurer, Medical Arts Building, Philadelphia.



Examinations for Public Health Service.—

Examinations of candidates for entrance into the regular corps of the U. S. Public Health Service will be held November 14, 1921, at Washington, D. C., Chicago, Illinois, and San Francisco, California.

Candidates must be between 22 and 32 years of age, and graduates of a reputable medical school. They must pass satisfactorily oral, written, and clinical tests before a board of medical officers.

Successful candidates will be recommended for appointment by the President with the advice and consent of the Senate.

Requests for information or permission to take this examination should be addressed to the Surgeon General, U. S. Public Health Service, Washington, D. C.

Eye Sight to Be Safeguarded by National Organization.—The National Eye Sight Conservation Council, with headquarters in the Times Building, New York City, has been formed for the purpose of conserving the eye sight of the younger generation and thus of the generations to come. Both the National Education Association and the American Medical Association are taking a lively interest in the plans and activities of the new organization.

Behind the new movement are such men as the following directors: R. C. Augustine, Decatur, Ill.; Bailey B. Burritt, New York City; R. M. Little, New York City; L. W. Wallace, Washington, D. C.; Cassius D. Wescott, M. D., Chicago, Ill. Board of Councillors: Arthur L. Day, Ph. D., Washington, D. C.; Frederick R. Green, M. D., Chicago, Ill.; Allan J. McLaughlin, M. D., Washington, D. C.; W. S. Rankin, M. D., Raleigh, N. C.; G. E. Sanford, West Lynn, Mass.; Thomas D. Wood, M. D., New York City. The officers are L. W. Wallace, president; Cassius D. Wescott, M. D., vice-president; Guy A. Henry, general director.



Refrigerating Engineers Meet.—The National Association of Practical Refrigerating Engineers, about to enter its thirteenth year, will hold its twelfth annual convention in Philadelphia at the Hotel Lorraine, Philadelphia, November 30-December 3, 1921. Hitherto the conventions of this association have been held in the West. There will be papers of interest to all groups of the refrigerating industry, including the employers and managers, who will be welcome to attend as visitors. Each year is showing an increase in the number of plant owners and plant managers who attend the sessions of the convention. They are commencing to realize that here they can obtain most valuable information as to plant operation. Many employers are making a practice of sending their engineers to these annual meetings. They have learned that it is a good investment.

The educational and examining board of the Association recently had prepared under its supervision a lecture course on "The Principles of Refrigeration," in twenty parts, for the benefit of its members. It is the most valuable work on the subject available, and the Board is to be highly commended upon the results of its efforts.

Edward H. Fox, the national secretary, 5707

West Lake Street, Chicago, will be glad to receive applications for membership in the Association from qualified refrigerating engineers.



American Dietetic Convention.—The fourth annual convention of the American Dietetic Association was held at the Hotel La Salle, Chicago, October 24-26 inclusive. The program included the following papers:

The Sphere of the Dietitian, Prof. C. P. Howard, Iowa State University; Human Engineering, Robert Wolf; Professional Spirit, Miss Harriet Vittum, Northwestern University, Settlement House; Coöperation in the Public Health Movement From a Medical Standpoint, Miss Blanch Joseph, Michael Reese Hospital, Chicago; Systems of Follow-Up Work in Dietetics, Mrs. Gertrude Gates Mudge, American Red Cross, Nutrition Service; Relation Between Diet and Nervous Condition, Dr. Sydney Kuh; To What Extent Shall Racial Customs Enter into Americanization Scheme, Miss S. P. Breckenridge, dean of women, University of Chicago; The Newer Ideas on the Dietetic Management of Diabetes and Their Practical Working Out in the Hospital, Dr. R. T. Woodyatt, assistant professor of medicine, University of Chicago.



Death of Dr. Crum.—In the accidental death by drowning of Dr. Frederick S. Crum, assistant statistician of the Prudential Insurance Company of America, modern research and vital statistics suffer a heavy loss. Dr. Frederick L. Hoffman, third vice-president and statistician of the Prudential, himself a statistician of note, found in Dr. Crum an invaluable associate, one whom it will be difficult, if not impossible, to replace.

Dr. Crum was a member of the American Economic Association, American Statistical Association, American Public Health Association, Casualty Actuarial and Statistical Society, and American Child Hygiene Association. Dr. Crum also acted as chairman of the Committee on Statistics in the Public Safety Section of the National Safety Council. In New Jersey he was active in the Anti-Tuberculosis League, the New Jersey State Industrial Safety Museum, and the Citizen's Committee on Public Comfort Stations of Newark. Dr. Crum contributed valuable information to the National Association of Corporation Training, covering health conditions in large industries.

He was also a member of the Metropolitan District Safety Council and of the special advisory committee on statistics of the New York City Department of Health. During the war Dr. Crum served with the Emergency Fleet Corporation of the United States Shipping Board, giving about one half of his time to the work.

Dr. Crum's researches in the field of statistics were as extensive as they were thorough. To list them would be to compile a miniature cyclopedia. They related to the marriage rate, preventive medicine, cotton mills, benevolent institutions, almshouses, insanity, railway accidents, aerial hazards, industrial risks, occupational diseases, deaths from gases, deaths resulting from the administration of anesthetics, population, growth, fatal accident rates, explosions, accidents at sea, family budgets, street traffic accidents, the vital statistics of many cities, states and countries, labor turnover, etc., etc. At the time of his death Dr. Crum was making deep research into the causes of automobile accidents and fatalities, with the hope of reducing or overcoming them in great measure.



Sanitary Organization in India.—A recent issue of the *Local Self Government Gazette*, published in the Kistna District of the presidency of Bombay, contains a comprehensive article by T. S. Tirumurthi, D. M., S. O., on the subject of "The Organization of a District Sanitary Service." According to the author, none of the district boards in the entire presidency of Bombay can boast at present of having a department for the administration of sanitation and public health. In the opinion of Dr. Tirumurthi, the appalling loss of life from preventable disease every year in Bombay is directly traceable to remediable defects in the administrative machinery, the ignorance of the general mass of the people with regard to the causation of disease on the one hand and their extreme poverty on the other. After describing in detail the deplorable existing conditions, Dr. Tirumurthi makes the following recommendations looking towards betterment: a full-time health officer in each district; the division of each district into ranges of 100 villages each, with a sanitary inspector in charge of each range. Dr. Tirumurthi submits estimates of the cost of such a system of sanitary inspection, the total annual expenditure for the establishment, as he sees it,

being in the neighborhood of 89,750 rupees. The objectives which Dr. Tirumurthi has in view are an immediate improvement in village sanitation; protection of water supply; the avoidance of epidemics; the inauguration of well-matured schemes for the advancement of general sanitation and public health. He conclude his survey with the wish that his own district, Kistna, may lead in the reforms outlined, and thus set a beneficent and salutary example to the rest of the presidency of Bombay and to India as a whole, the material welfare of the country, in his view, being greatly dependent upon the well-being of the people.



STATE HEALTH NOTES— GENERAL

California.—Long bearded "healers" calling themselves "brothers" have descended upon several Southern California cities where they have attracted mobs of the curious and of the credulous. Los Angeles, Venice, San Bernardino and Santa Barbara have recently harbored these "miracle men" who claim credit for the most marvelous cures. The authorities of these cities wisely declared that no persons suffering from communicable diseases shall appear in the crowds that flock to these "healers." The public health, they maintain, must not be placed in jeopardy by such procedures. Two escaped lepers recently were found in a Los Angeles crowd which had assembled to witness the performance of one "Brother Isaiah," and the insanitary conditions of the premises where the "miracles" were wrought, due to the unstable physical condition of the persons attending, made it necessary for health authorities to intervene.

Of these "cures" the Santa Barbara *Sun* says:

"If the 'Brother Peter' who has been holding forth in San Bernardino for more than a week is about to move on to other fields, perhaps his own action will furnish a solution of one of the most troublesome problems that has been brought to the attention of municipal and health authorities. If this so-called healer has any gift by which his ministrations bring relief to the suffering, it is hardly less than criminal that they experience such suffering and exhaustion as has been the rule among those who waited for hours and sometimes days in their effort to reach him. If, on the contrary, there is nothing but disappointment for them in the end, then it were better that

a compulsory finish be made of the situation, and at once.

"As for ourselves, the *Sun* has yet to learn of a single actually authenticated case of a genuine cure being effected. We do not believe there has been one. There have been some surprising developments, and in a few cases people apparently unable to walk have left their cots or stretchers, but it is our opinion that in every case such action was the result of excitement based on the hope of results, and when that has passed, conditions will be as before."



California.—An institute for administrators and instructors in schools of nursing was held in San Francisco, August 4, 5 and 6, immediately following the State Nurses' Convention. The institute was organized by the California State Nursing League in coöperation with the Bureau of Registration of Nurses of the State Board of Health. One hundred and sixteen persons representing 48 schools of nursing attended. Papers covering many important phases of nursing education were presented, demonstrations by students in the San Francisco training schools were given and the interesting round table discussions were of great benefit to those attending. The psychology of teaching occupied an important place on the program as did also the nursing opportunities in psychiatry. Considerable time was given to the discussion of administrative problems. So successful was the institute that arrangements were made for holding two such conferences each year, one in Los Angeles during the winter and one in San Francisco during the summer months.



Colorado.—Finding that half of the children in nineteen of the city's public schools were seriously underweight, Denver has adopted a scale-watching policy which is bound to result in marked improvement. The Denver Tuberculosis Society has made the following significant discovery.

In these nineteen schools only 6 per cent of the children are normal in weight for their height and age, a total of 72 per cent or 7,443 of the children are underweight; 49 per cent or 5,026 are 7 per cent or more underweight. Many of these children are more than 7 per cent underweight, one being as much as 38 per cent and another 40 per cent. Since these schools represent every type of elementary

school in the city, from an economic, industrial, racial and environmental viewpoint, it does not seem unfair to conclude that half, or over 12,000 children in the public schools of Denver are suffering from serious malnutrition. This condition is as prevalent among the rich as the poor, and in American homes as well as those of foreign parentage.

The Denver Tuberculosis Society recommends nutritional clinics and classes in which mothers are trained as well as the children, mid-morning and mid-afternoon luncheons, monthly weighing and measuring of children, open-air rooms in every school, one immediately at a school where 22 contact cases were found, the treatment of malnutrition according to accepted standards, and a sufficient corps of physicians and nurses to carry out this program adequately.



Illinois.—Under the Civil Administration Code, provision is made for the appointment of a board to act in an advisory capacity with the director of the State Department of Public Health. Governor Small, on September 22, appointed the first board of the kind that was ever selected. It consists of the following named members: Dr. W. A. Evans, Chicago; Dr. John Dill Robertson, Chicago; Dr. E. P. Sloan, Bloomington; Dr. C. W. Lillie, East St. Louis, and Mrs. E. N. Monroe, Quincy.

The duties of this advisory and non-executive board are highly important. Its field of activities is broad. Among other things it has the power:

1. To consider and study the entire field; to advise the executive officers of the department upon their request; to recommend, on its own initiative, policies and practices, which recommendations the executive officers of the department shall duly consider, and to give advice or make recommendations to the Governor and the General Assembly when so requested, or on its own initiative.

2. To investigate the conduct of the work of the department with which it may be associated, and for this purpose to have access, at any time, to all books, papers, documents and records pertaining or belonging thereto, and to require written or oral information from any officer or employee thereof.



Illinois.—More cases of poliomyelitis or infantile paralysis have already been reported to the State Department of Public Health dur-

ing 1921 than for any previous year since 1917 when an epidemic of this disease reached alarming proportions. Up to September 24, a total of 430 cases had been reported during the year, against 292 for 1920, 370 for 1919, 303 for 1918 and 833 for 1917. While cases have been reported from practically every quarter of the state the greater incidence in less than a score of counties seems to indicate well defined foci.

No certain preventive measures for poliomyelitis are known, but it would seem that a greater degree of public and professional alertness would afford considerable protection by recognition and isolation of cases and would also aid in preventing most of the serious effects by securing proper early treatment. The State Department of Public Health has issued special literature describing poliomyelitis in detail and giving complete information relative to the latest control methods. In addition to this the Department will furnish consulting diagnosticians in doubtful cases. It also maintains 25 special clinics at various points throughout the state for the after care of victims of this crippling disease.



Maine.—The five-day clinic for Maine physicians, promoted and financed by the Maine Public Health Association and conducted at the Central Maine Sanatorium under the auspices of the management of the sanatorium during the first week in August, was an even greater success than the one held last year. The total registration was 117, including 72 physicians and 24 public health nurses.

The importance of vision in our everyday life and in its place in a general health campaign was discussed by Dr. S. J. Beach of Portland, who pointed out the great economic value of the eyes and illustrated many ways in which they needlessly become impaired.

The subject of "Cancer Control" was discussed by Dr. John A. Gerster of the National Committee for the Control of Cancer.

Diagnostic clinics and lectures on tuberculosis were conducted twice each day by Dr. Edward O. Otis and Dr. Samuel Ellsworth, both of Boston and both recognized nationally and internationally as tuberculosis experts.

Fort Fairfield, Maine, is distinguished by the fact that her Longfellow School is the only school in New England to qualify for one of the pennants awarded by the National Tuberculosis Association. The school was given

a framed message of congratulation from the executive committee of the Maine Public Health Association, which has also voted an honorarium to the teacher who inspired the pupils to such efforts.



Michigan.—Every health officer and nurse in the state and all members of the Michigan Public Health Association have been asked by the state department of health to attend a five-day public health conference from Nov. 28 to Dec. 2 in Lansing, Dr. R. M. Olin, commissioner, today announced. The conference will be held in conjunction with the winter meeting of the Michigan Public Health Association.

Short courses of instruction by lecturers and demonstrators will be offered in every phase of health activities, the purpose of the conference as outlined by the commissioner being to give a week of intensive training in problems of health administration and disease control. County boards of supervisors have been petitioned by Dr. Olin to authorize their township health officers to attend.

At least seven national and international specialists in scientific and public health fields, besides a score of state authorities, will conduct the courses.



Michigan.—During last summer, the city of Detroit maintained a summer health camp for undernourished children and for those exposed to tuberculosis. The camp was designed to appeal not only to the physical health of the children but to their childhood emotions and instincts as well.

Ornamenting the space over the doorways of the various units were plaster reproductions of Mother Goose fables—The Three Men in a Boat, Old King Cole, Humpty Dumpty, etc. This, together with the high gables, the expansive roofs of multi-colored shingles, the miniature doorways and other unusual features, suggested the Gingerbread House, famous in the adventurings of Hansel and Gretel.

It is this atmosphere of Fairyland that coöperates with the open air, the sunlight, nourishing food and kindly nursing attention in bringing back roses into some pale cheeks. This is the right kind of child psychology for health work.—*Weekly Health Review*, Detroit Health Department, August 6, 1921.

(J. A. T.)

Michigan.—Specifications for bidders for furnishing diphtheria antitoxin, toxin-antitoxin, and toxin to the Michigan department of health in accordance with the free distribution law passed by the 1921 Legislature have been submitted to manufacturers and distributors licensed by the United States Government.

Requirements outside of technical specifications call for initial deliveries of antitoxin on or before Jan. 1, 1922, to points throughout the state designated by the commissioner of health, and in quantities estimated by state authorities to be sufficient for the first three months' demands. After this date the contractor will be required to keep a sufficient reserve supply of the products on hand to meet all needs.

Plans are now being worked out for antitoxin distributing stations at the most accessible points in every county. In preparation for the actual diphtheria eradication campaign which will start Jan. 1 with free distribution of antitoxin, every physician, health officer, nurse, school commissioner, superintendent and principal, village president and mayor is being circularized with educational literature.

During the first seven months of 1921 a total of 479 deaths from diphtheria was reported to the division of vital statistics. This gave the state a diphtheria death rate of 21.5 per 100,000 population up to Aug. 1. Opening of schools, it is said, will be attended with the usual increased prevalence of diphtheria unless communities employ more stringent control methods than ever before.



New Jersey.—The Compensation Bureau of the state has been acting in various parts of the state since 1911. All who have been injured in the performance of their duty are referred to the Compensation Bureau of the Department of Labor for the determination of what allowance for temporary disability should be made, and for the determination of any permanency, should any exist. The greater percentage of such cases have been discharged by their medical attendant as cured, improved or permanently disabled.

It was quite obvious that a number of such cases could be improved if treatment was continued and certain mechanical and other therapeutic measures instituted. The Rehabilitation Commission is the result of the anal-

ysis and study that was made of sub-standard individuals.

A clinic was organized in Newark on October 1, 1919, a second during the latter part of 1920 at Jersey City, and the third at about the same time at Camden. Within the near future about three more clinics will be developed in other parts of the state. All of these clinics will be associated with the Compensation Bureau, to whose offices traumatized individuals must be referred for a final analysis of their defect or defects, should any exist, and for a determination of the compensation payment to which they are entitled.

Each clinic will have an advisory board of about ten members appointed by the State Commission, made up of men who are conspicuous in the medical profession because of their standing and professional attainments. Defectives or sub-standards who may be bettered by operation or by treatment will be referred with the consent of the attending physician or surgeon to such specialists as the case may warrant. The clinics will be in charge of a surgeon who has had experience in various types of trauma, deformities and disabilities. Operations of any considerable importance will not be performed at these clinics, but will be referred to hospitals and to specialists. Occupational diseases will also receive the same consideration.

There is no ulterior motive in the establishment of this commission or in these clinics. It is to be hoped that the profession will regard the Commission and the clinics as part of their own working armamentarium, and that they will utilize them for the benefit of their patients directly or indirectly.

The equipment of the clinics will be such as the general practitioner may desire: mechanical apparatus, light apparatus, massage, hydrotherapy, laboratory, X-ray, and any and all of the essentials that are of therapeutic value will be installed.



New Jersey.—Montclair, New Jersey, is said to have a higher percentage of prominent advertising men residents than any municipality its size in the country. This may account for the up-to-date and effective methods which were employed in bringing its recent "Health Week" to the attention of the community. A unique feature was the use of circus tents for the housing of the various exhibits, lectures and demonstrations. Twenty-

three of the local organizations, including the Board of Health, Board of Education, Child Welfare Society, and the Tuberculosis Association, coöperated, the program being developed under the supervision of Health Officer Herbert B. Lerner. The speakers included such prominent experts as Dr. Royal S. Copeland, health officer, New York City; Dr. Eugene Lyman Fisk, medical director, Life Extension Institute; Dr. Richard A. Bolt, general director, American Child Hygiene Association; Dr. Harry W. Redfield, U. S. Department of Agriculture; Dr. Charles V. Craster, health officer, Newark, N. J.; Miss Marie L. Rose, associate director, Child Health Organization of America; Dr. William A. Bierman, American Social Hygiene Association; Dr. T. J. Headlee, entomologist, N. J. State Department of Agriculture.



New York.—Director B. R. Rickards of Division of Public Health Education of the New York State Department of Health has put the health officers and public health nurses of the country in his debt by preparing for each of these large groups an exhaustive bibliography. One bibliography gives a list of essential books for every health officer, essential periodical publications, and an extensive list of reference books. The nurses bibliography suggests two tabloid libraries, "a library in a brief case" and "a library in a hand-bag." Another heading is "the periodical stand," listing every publication likely to be of special interest to the public health nurse. A few multigraph copies of Dr. Rickards' bibliographies are available for free distribution. Books listed in the bibliographies can be borrowed from the State Medical Library for a period of four weeks.



North Carolina.—In several counties of the state the State Board of Health is instituting an intensive check on the reports of vital statistics. It is necessary that a high percentage of births and deaths be reported in order for the state to remain in the official registration area, under the rules of the Bureau of the Census. Periodic checkings are required to show conclusively that such percentage is maintained.

Special attention will be given to the reports of births. The reports of deaths in the state are now practically one hundred per cent complete, but there is reason to believe that quite

a number of births are not reported, as required by law. North Carolina, according to the reports made, leads all the states of the Union with the highest birth rate, nearly eighty-five thousand births having been recorded during the past year. At the same time it is known that quite frequently a birth is not reported to the local registrars. It is to find these, and to stimulate more complete reports, that the intensive checking is being instituted.

The method of checking returns is one recommended by the Bureau of the Census. In the selected territory a careful canvass is made through government agents to ascertain the names of all children, with the names of parents, who have been born within the past year. These reports are then checked against the birth certificates filed with the bureau of vital statistics in the State Board of Health from the same territory.

Under the laws of North Carolina it is a misdemeanor punishable by fine or imprisonment for an attending physician or midwife to fail to report promptly to the local registrar any birth.



Ohio.—That the central and mid-western states are waging an aggressive and winning war on tuberculosis was apparent to the hundreds of delegates who attended the ninth annual meeting of the Mississippi Valley Conference on Tuberculosis held at Columbus, Ohio, September 12, 13 and 14. Reports from each of the states in the Mississippi Valley indicated a further decline in the tuberculosis death-rate for 1921. These reports covered a ten-year period and some indicated that when official statistics for 1921 are available, they will be able to show a reduction of 50 per cent in the tuberculosis death-rate as compared with the figures of ten years ago. This reduction in tuberculosis mortality rates was attributed in a large measure to the educational work carried on during the past ten years in these states. Dr. Walter McNab Miller, St. Louis, the president of the Conference, ventured the prediction that another decade will see the absolute control of tuberculosis in this country.

With such well-known authorities as Dr. Allen K. Krause, Baltimore, Maryland, editor of the *American Review of Tuberculosis*; Dr. James Alexander Miller, New York, president of the National Tuberculosis Association, and Dr. Haven Emerson, formerly of the U. S.

Veterans Bureau, on the program, the proceedings of the conference, which will be printed later, will be of great value to those engaged in tuberculosis work throughout the country.

Dr. C. D. Selby, Toledo, was elected president of the Ohio Public Health Association, Monday, September 12, at the annual meeting held in Columbus in connection with the Mississippi Valley Conference on Tuberculosis and the Ohio Health Commissioners. Other officers elected were Mrs. Neal Waddell, Greenfield, and Mrs. Mary T. Fillius, Warren, vice-presidents; Robert G. Paterson, Columbus, secretary; T. S. Huntington, Columbus, treasurer, and C. L. LaMonte, Columbus, auditor.



Utah.—A bulletin recently issued by the Department of Public Instruction of the state of Utah outlines the interesting activities of the Division of Health Education, under the direction of C. N. Jensen and E. G. Gowans. A complete course of study in hygiene for the entire six grades is given in detail, including songs, poems, textbooks, questions and answers, exercises, lesson plans, suggestions for children's day, pictures, physiology, lessons in sanitation, health habits and related subjects. With such a foundation, Utah is insuring the health of her citizens of tomorrow.



Wisconsin.—The Wisconsin State Board of Health has been conducting an intensive educational campaign against cancer. The state press has printed much information prepared in news story form, and county medical societies, fraternal bodies, labor unions and other agencies have assisted by presenting the subject through competent physician speakers. The campaign has been directed by Dr. I. F. Thompson of the Bureau of Communicable Diseases.

Miss Adda Eldredge of New York, a member of the board of directors of the American Nurses' Association, has been chosen as director of nursing education for Wisconsin, under the new law reenacting the graduate nursing laws. Steps to place in effect the higher standards for nurses' education were taken by the state committee on nursing education. Graduates from foreign countries desiring to work in the state must take the next examination. Student nurses now in training may not put in overtime in order to complete their courses before Jan. 1, 1922.

INDUSTRIAL HYGIENE AND OCCUPATIONAL DISEASE

Abstracted by DRs. E. R. HAYHURST and E. B. STARR.

Lead Poisoning in the Pottery Trades.—

The Service's investigations began in 1919 at the request of the Brotherhood of Operative Potters. The investigators received cordial support from both the workers and the pottery managers, and 92 potteries in New Jersey, Ohio, Pennsylvania and West Virginia, employing 21,000 persons or 53 per cent of the total in the country, were investigated. Only the workers exposed to lead were examined, of whom 1,504 were males and 398 females. A very large majority were native-born Americans. The highest percentage of poisoning among men was found to be among the dippers and the next among the mixers and the odd-men. Among the women the highest was found among the dippers' helpers and the ware-gatherers. These workers came into direct contact with the glaze. The percentage of poisoning decreased in proportion to the decrease of lead used in the glaze. The English use of leadless glaze could be followed in America only by radical changes in manufacturing and firing methods. However, the adoption of fritted lead glazes would greatly improve the situation. The number of cases of lead poisoning increases with age of the workers, as with their relative years of exposure and with the length of the work day. Poisoning was more prevalent among the men than among the women, due to the fact that the men have been exposed for about three times as many years as the women. Poisoning was more prevalent among the workers who ate in the workroom and in places where general sanitation facilities were bad, also where dust-counts and percentage of lead in the dust were high. The susceptibility of the individual is influential as well as his personal habits. No one should jump at the conclusion that to remedy any particular condition, other than remove the lead from the glaze, would immediately reduce the poisoning. Workers are given the following recommendations: "Always eat a good breakfast; drink milk; never eat or drink in the workroom; and never drink from uncovered containers kept in the workroom. Never wear street clothing and shoes

in the workroom; never take work clothes home; and keep the work clothes and street clothes in separate sections of the locker. While at work do not chew tobacco or gum; do not spit on the floor; do not wear beards; do not stroke mustache with glaze-coated hands while at work; and do not put fingers, if covered with glaze, on lips or in mouth. Keep your hair covered in the workroom. When quitting work wash face and hands with hot water; clean finger nails; and rinse out mouth. Avoid creating dust; insist that only wet sweeping and dusting be done; and avoid spilling glaze, as it will create lead dust.

"Plant managers should supply: Bubbling fountains with palatable drinking water; adequate dressing rooms with two compartment lockers, for each worker; decent and adequate toilet facilities; and adequate natural and artificial illumination and ventilation. They should discourage eating in the workroom and eating anywhere without previous washing of the hands and face; should encourage the use of overalls; should absolutely forbid dry sweeping and all sweeping of any type during work hours; and should prevent, so far as possible, the spilling of glaze and the consequent dust and dirt."—Newman, McConnel, Spencer, and Phillips, *Health News*, U. S. Public Health Service.



Dangerous Gases Produced from the Use of Fire Extinguishers.—

The use of fire extinguishers in confining areas, such as in mines, is attended by the production of varying quantities of irritating and poisonous gases where the user cannot escape without breathing the fumes. Carbon tetrachloride extinguishers emit vapors of that substance as well as HCL gas, phosgene, and products of incomplete combustion such as smoke, CO, and CO₂. The Department made a number of tests of this type of fire extinguisher and of foamite extinguishers. It concludes that the foamite type produces no dangerous gases although there were present the normal constituents of wood smoke, including up to 0.27% of CO, suffi-

cient to cause severe headache and nausea from 20 to 30 minutes' exposure and to overcome a man on longer exposure. Military authorities consider 25 parts per million of phosgene as sufficient to produce death on 30 minutes' exposure. Carbon tetrachloride extinguishers yield from 20 to 90 parts of phosgene per million. Care must therefore be observed in the use of fire extinguishers of the carbon tetrachloride type in underground fire-fighting.

"There is, of course, no more effective method of putting out ordinary fires than the liberal use of water. Soda and acid portable extinguishers depend on the more effective use of a limited amount of water. Foamite extinguishers have an added advantage for oil fires in placing a blanket of carbon dioxide on the oil surface, this smothering the flame. The Bureau of Mines has made no experiments on the relative extinguishing efficiency of soda and acid extinguishers and foamite extinguishers for ordinary fires. The experiments just described show that neither of them add any extra hazard due to evolved gases."—U. S. Bureau of Mines, *Reports of Investigations*, Serial No. 2262, June, 1921.



Gas Masks for Use in Ammonia Fumes.—

The Burrell ammonia mask, made by the Mine Safety Appliances Company of Pittsburgh, successfully passed the exhaustive series of tests given by the U. S. Bureau of Mines chemists in accordance with Schedule 14, "Procedure for establishing a list of permissible gas masks." The mask was largely developed by the U. S. Army under direction of the Bureau of Mines and the Chemical Warfare Service. It is fitted with a special ammonia canister containing copper sulfate pumice-stone mixture devised by Perrott, Yablick, and Fieldner. It has been found to give absolute protection in any percentage of ammonia gas which the wearer of a mask can stand without unbearable skin irritation. Under severe conditions of active work and high concentration of ammonia gas the canisters were found to give a service period of at least 30 minutes, the requirements for approval being 20 minutes.

"Permissible ammonia masks under this approval will hereafter bear a plate with the seal of the Bureau of Mines, approval and caution clause to promote safe usage."—

Special News Report, U. S. Bureau of Mines, August, 1921.



A Text-Book on CO Poisoning.—This book is by a well-known Berlin toxicologist, Dr. L. Lewin, who has written many articles on carbon monoxide poisoning in current medical literature. The subject is dealt with exhaustively. The chapter on history opens with the statement that carbon monoxide is now, and has been since the first discovery of fire, the most widespread poison connected with human life and activity. Aristotle mentions coal gas as a cause of death. Toward the latter part of 1500, Donato of Mantua described practically all the symptoms of this form of poisoning, the rosy color of the face and the appearance of normal sleep in the coma of carbon monoxide victims, the fever, bronchial irritation, and pneumonia which follow, and the different manifestations of damage to the brain. The author gives analyses of smoke and gas from all possible sources, and the student who wishes to look up "gassing" in mines, in the use of explosives, in blast furnace work, in the use of power gas, and in the manufacture and use of illuminating gas will find much valuable material here. In the section on the physical and chemical properties of carbon monoxide, Lewin warns against the fallacy of applying to human beings the facts discovered in the laboratory, for in this form of poisoning, more than in any other, individual characteristics play an enormous rôle. The outcome of no single case can be predicted on the findings with regard to concentration of carbon monoxide or absence of oxygen; the man's fate lies essentially in his own vital forces.

He finds carbon monoxide excreted very rapidly during the first hour after removal to fresh air, then more slowly, but by the end of six hours it is usually no longer demonstrable. He is very skeptical about the instances reported in the literature of carbon monoxide in the blood after more than twenty-four hours in pure air. Lewin takes a very positive stand in the controversy over the mode of action of carbon monoxide, denying that there is any direct action on the cells of the central nervous system or of any other organs. All the manifold lesions found after carbon monoxide gassing result from the injury caused by oxygen privation.

Carbon monoxide poisoning is, however, distinguished from all other oxygen-deficiency or hemoglobin-alteration poisons by the occurrence of sequelae. In all toxicology no known body can compare with carbon monoxide in the variety and extent of lesions following it, and individual susceptibility is not enough to account for them. But to assume that carbon monoxide acts directly on the brain and other organs does not help, for in that case the effects would be more uniform and constant. Their great variation and extent show that very special conditions must be present, not accounted for by mere oxygen deficiency or other poisons, and it is these conditions that are the most puzzling elements in the problem of carbon monoxide poisoning. To the unsettled question of chronic carbon monoxide poisoning Lewin does not contribute very much, although he gives some instances of marked and undoubted slow poisoning. There is great difficulty in diagnosis, for the symptoms are usually only headache, anemia, cardiac neurosis, or general nervousness. The symptoms which come on usually at the end of the day's work—headache, dizziness, and disturbance of vision—pass over quickly at first in the open air, but later the natural recuperative powers fail and some form of chronic poisoning sets in, the most common of which is anemia, which may be of any type up to the severe pernicious. The ground for administering oxygen is the fact proved by experiment that the dissociation of carbon monoxide from the blood takes place five times as quickly with pure oxygen as with ordinary air. He approves of venesection as lessening the danger of hemorrhage, stimulating blood regeneration, and also as effecting a partial removal of the poison (Teilentgiftung), which last is hardly in harmony with his repeated assertion that carbon monoxide is not a poison. Normal salt infusion is of decided value, especially when preceded by bleeding, but Lewin objects strenuously to blood transfusion, apparently under all circumstances.—From review by Dr. Alice Hamilton, *Jour. Industrial Hygiene*, June, 1921, Vol. III, No. 2, p. 75.



The Amount of Lead to Produce Poisoning.—Dr. T. M. Legge contributes a chapter on Medical Research in Factories in the report of the Chief Inspector of Factories (Great Britain). Investigations 'confirm

the conclusions previously arrived at by him that about two milligrammes of lead inhaled daily represents the minimal dose which will cause plumbism.—"Factory Hygiene in 1920," *Lancet*, (London) Aug. 13, 1921, Vol. CCI, No. 5,111, p. 356.



CO Poisoning (Physiological Effects of Automobile Exhaust Gas, etc.).—The authors were called upon to investigate the possible health hazards attendant upon the use of tunnels under the Hudson River in connection with exhaust gas from motor vehicles. A preliminary report of very carefully conducted experiments appears in the July and August issues of the *Journal of Industrial Hygiene*. By those interested in CO poisoning, the papers should be read in detail, as much is to be learned in following the methods which the authors used in arriving at their conclusions. Experiments were made on men in a closed gassing chamber. A number of charts and tables accompany this paper. The principal conclusions are as follows: When the time in hours multiplied by the concentration of carbon monoxide in parts per 10,000 of air equals 3, there is no perceptible physiological effect. When it equals 6, there is a barely perceptible effect. When it equals 9, headache and nausea are induced. When it equals 15 or more, the conditions are dangerous to life.

In the exhaust gas from gasoline, carbon monoxide is the only considerable toxic constituent. In the exhaust gas from coal distillate (benzol, etc.) and in illuminating gas there are present accessory toxic substances.—Henderson, Haggard, Teague, Prince, and Wunderlich, *Jour. of Industrial Hygiene*, July and August, 1921, Vol. III.



Industrial Dermatitis (Oil Furunculosis).—In an editorial review of this subject it is pointed out that Dr. E. L. Collis in 1910 concluded that the trouble was caused by the oil dissolving the natural fats, palmitin and stearin, from the skin, which then becomes dry; cracks follow, through which microbic invasion occurs, setting up dermatitis. When dirt and oil block the small glands at the root of the hairs, folliculitis, somewhat different in causation, may complicate the case. The degree of natural oiliness in the skin of different individuals varies considerably, and where it is most pronounced the tendency to dermatitis is

least. The position may be briefly summarized as follows: (1) Oils of all types and other fat solvent fluids are liable, if they come in contact with skin for some time, to produce dermatitis; the underlying cause is desiccation with subsequent cracking of the skin. (2) The exact form of dermatitis which results depends on the infective organism or organisms which obtain access. (3) The organisms are not usually present in the oil, but exist on the human body; therefore the dirtier the skin the more readily is it infected. (4) Prevention depends first upon cleanliness, and secondly upon restoring the dissolved fat by anointing the skin with such a mixture as equal parts of lanolin and castor oil. (5) Treatment consists in removal from exposure and entire rest to the affected skin by covering it with a flexible paint, such as is used in treating burns.—Editorial, *Lancet*, London, July 2, 1921, Vol. CCI, p. 30.



Earliest Positive Sign of Lead Absorption.—Physical signs and symptoms of lead poisoning, such as the blue line on the gums, pallor, wrist drop, etc., indicate latter stages of lead poisoning. The pretoxic period of indeterminate duration during which these phenomena are non-existent is usually important. Schmidt concludes that the toxic action of lead falls first on the red blood cells, producing the so-called basophile granulations. The presence of these abnormal corpuscles in the blood is deemed of diagnostic import. Teleky's contention that similar signs appear in the red corpuscles in malaria, cancer, and pernicious anemia is not quite ingenious since the differential diagnosis between lead poisoning and these conditions does not rest upon this one isolated sign. The point is that in lead poisoning the basophile granulation is only a transient or intermittent phenomenon. It is recognizable only at intervals and for a brief period. At other times it is not distinguishable at all. In this respect it is similar to the finding of the tubercle bacillus in the sputum. He quotes Schoenfeld as stating: "On the basis of 1,043 blood examinations, I have come gradually to the conviction that this test is indispensable, occupying the foremost place as a means of detecting the earliest stage of plumbism and making it possible to adopt effective measures for preventing the further extension of the

poisoning." This author relates the clinical histories of two girls who, after only three days' employment as painters (decorating ceramic ware), were found to exhibit the characteristic blood changes, though all other signs and subjective symptoms were absent. Münz reached the same conclusion: "Basophile granulation of the erythrocytes is, according to our experience, the first symptom of lead poisoning, appearing before signs of any other sort are manifest." These granular red corpuscles are found in the blood for a variable period, ranging from a few weeks to two years. The blood test may often determine, therefore, whether a workman's illness is of occupational origin or otherwise. As Schmidt observes, "The microscope is an absolutely non-partisan arbiter between employer and employee." From the foregoing it is obvious that the worker in lead or any of its preparations must look to the industrial physician to safeguard him against the toxic action of this subtle poison. Otherwise he cannot be forewarned. There are no premonitory symptoms of lead invasion. The workman has no microscope with which to examine his own blood; and if he had one, he could not isolate and identify the abnormal leaded corpuscles or distinguish them from the healthy red cells.

Under the usual conditions of employment the lead worker has no inkling of danger until his system becomes saturated with the metallic salt. Then suddenly colic, tremor, paralysis, and other ominous symptoms descend upon him, like the wolf on the fold.

It is the office and duty of the industrial physician, therefore, to anticipate and ward off the sequels of cumulative lead absorption by means of preventive treatment.

But he can himself detect the ambushed peril in only one way. The searchlight of the microscope alone can penetrate the obscurity and reveal the presence of the lurking foe. Hence it is obligatory upon the shop or factory physician to utilize the microscope as an instrument of precision to scan blood samples taken from every lead-handling employee, at frequent intervals, in order to curb and control the potential toxicity of the absorbed lead while it is still innocuous and quiescent in the circulation. If he neglects this duty, his is "the very cipher of a function."—*Monthly Labor Review*, U. S. Department of Labor Statistics, August, 1921, pp. 143-145.

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THE AMERICAN PUBLIC HEALTH ASSOCIATION, PAST, PRESENT, FUTURE

MAZYCK P. RAVENEL, M. D.

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Presidential Address read at the opening General Session of the Fiftieth Annual Meeting, American Public Health Association, New York City, November 14, 1921.

Of the altruistic instincts veneration is not the most highly developed at the present day; but I hold strongly with the statement that it is a sign of a dry age when the great men of the past are held in light esteem. (Osler.)

IT seems most fitting that on this, the fiftieth anniversary meeting of the American Public Health Association, we should pause to pay homage to the lives and accomplishments of those who guided the course of our Association in its early years and won for it the proud place it now occupies as an instrument for public good. We may well review our work and take stock of our achievements in an earnest effort to determine how far we have justified our existence and attained our ideals.

The Association "had its origin in that natural desire which thinkers and workers in the same fields, whether of business or philanthropy, or the administration of civil trusts, have for mutual counsel, advice and coöperation." (Smith.)

A preliminary meeting, attended by Doctors E. M. Snow, Providence, R. I., Chairman; J. H. Rauch, Chicago, Ill.; J. Ordronaux, Roslyn, N. Y.; Stephen Smith, New York City; E. H. Jones, New York City; C. C. Cox, Washington, D. C., and Carl Pfeiffer, New York City,

architect, was held April 18, 1872, at 301 Mott St., New York, at which an informal discussion on the formation of a national sanitary association took place. A larger and more formal gathering was decided upon, and on the evening of the same day, these gentlemen, with the exception of Dr. Snow, and the addition of Doctors Elisha Harris and Moreau Morris, New York City, and Heber Smith of the Marine Hospital Service, met at the New York Hotel. At this meeting a Committee on Permanent Organization was appointed with Dr. Stephen Smith as chairman. This committee issued a call for the first regular meeting held at Long Branch, New Jersey, September 12, 1872, at which time a constitution was adopted, and Dr. Stephen Smith elected the first president.

Up to this time no public-health organization existed on the American continent, and public-health practice, in so far as it existed at all, was empirical and lacked uniformity.

In his classic address before the International Medical Congress in 1876, Dr. Henry I. Bowditch states that National Sanitary Conventions, so called, were held in Philadelphia, 1857, Baltimore, 1858, New York, 1859, and in Boston,

1860, but ceased with the outbreak of the Civil War.

Only three states, Massachusetts, 1869, California and Virginia, 1871, and the District of Columbia, 1870, had established boards of health prior to 1872, and only twelve up to 1876, the date of Dr. Bowditch's survey. In only two states was registration of births, deaths, and marriages claimed to be made with any degree of accuracy, though twenty had passed some laws concerning registration. In 1873, 134 cities in the United States had some form of health board.

In England three epidemics of cholera in 1831, 1849 and 1854, had brought the appointment of commissions of investigation. In 1848, following the report of a royal commission appointed to investigate outbreaks of disease in large towns, and to recommend measures for the improvement of the public health, comprehensive sanitary acts were adopted, a general board of health was established and medical officers of health were appointed.

In 1869 the famous Royal Sanitary Commission was appointed, and proposed for the first time a ministry of health, which failed to carry, but the Local Government Board was created in 1871. An epidemic of Asiatic cholera in 1832 resulted in a Provincial Act for the Appointment of Local Boards of Health, and in 1849 this act was amended to provide for a central board of health, to continue during the pleasure of the legislature.

In America, though we had not advanced so far, the leaven was working, and in 1850 there was published the "Report on the Sanitary Condition of Massachusetts," written largely, if not wholly, by a layman, Lemuel Shattuck. It was a remarkable paper which suggested the appointment of a state board of health, and so well outlined the duties and functions of such a board that when the board was finally appointed in 1869, the secretary, Dr. Derby, found in the pages written twenty years before, his inspiration

and support. In 1870 Dr. Derby wrote the first paper ever published in this country under the direction of a permanent body appointed by state authority for the investigation of diseases and instruction of the public concerning them.

Such was the condition of things in the English-speaking countries when our Association was born.

In France, Pasteur was revolutionizing all former conceptions of disease by his discoveries, and the formulation of new theories.

In August and December, 1857, Pasteur published his first papers on lactic acid fermentation and alcoholic fermentation, showing that fermentation was caused by living organisms.

Discussions on spontaneous generation followed and persisted for several years. The proofs against it given by Pasteur settled the dispute for all time.

In 1865 he took up the study of silk-worm disease, and soon brought it under control by methods based on his new discoveries, his experiments adding much to the knowledge already gained, and confirming the theories advanced.

In England, Lister, a surgeon, began in 1867 to put into practice the ideas he had gained as a student of Pasteur, and was able to report in 1869 that of forty patients who had suffered amputations, thirty-four had survived. Such good results were unheard of at that time, and were attributed by him entirely to antiseptic surgery, which was the practical application of Pasteur's theories to surgical practice.

In 1870-72 Pasteur pursued his studies on the fermentation of beer, and invented what is now called "Pasteurization," to correct unhealthy fermentations.

No more opportune time could have been chosen for the formation of our Association. The art of medicine was becoming the science of medicine, and modern preventive medicine was being born. The discoveries of Pasteur put an end to superstition and empiricism and substituted the bed-rock of science

as a foundation on which has been erected the wonderful structure of medicine as it exists to-day.

Although begun and apparently designed largely as an association of administrative officers, it was inevitable that others should be attracted to the ranks. The science of bacteriology had come into existence as a result of Pasteur's work, and the laboratory soon became a prime factor in the study and prevention of disease. The germ of anthrax had been seen by Rayet and Davaine in 1850; Delafond, 1860, had shown its power of vegetation, and Davaine, 1863, its causative relation to the disease, while Koch, 1876, obtained pure cultures on artificial media and demonstrated the spores. Pasteur completed the demonstration, making anthrax the first disease in which the etiological relation of a germ to a disease was proved.

In 1877 the bacillus of malignant edema was discovered by Pasteur; in 1879 the germ of chicken cholera by Pasteur, and the gonococcus by Neisser. In 1880 the pneumococcus was discovered by Pasteur and by Sternberg independently, and the typhoid bacillus by Eberth.

Of even greater significance, perhaps, was the announcement in this year by Pasteur of a bacterial vaccine against chicken cholera, followed in 1881 by his epoch-making demonstration of vaccination against anthrax. This year brought also the discoveries of the pus-forming organisms, the staphylococcus and streptococcus, knowledge of which has revolutionized modern surgery and robbed maternity of its chief dangers. The year 1882 will always be notable for the discovery of the tubercle bacillus by Koch. Loeffler and Schutz isolated the germ of glanders in this year also. The year 1883 saw the discovery of the spirillum of Asiatic cholera by Koch, and the bacillus of diphtheria by Klebs, while 1884 was marked by two discoveries of great public-health significance—the isolation of the diphtheria bacillus by Loeffler, and of the typhoid bacillus by Gaffky.

The influence of the new science on public-health ideas and practice was paramount. In the pages of our *Transactions* one may find a veritable history of bacteriology, with its practical application to public health, and while the earlier discoveries came largely from abroad, our Association was not without representatives, notably in the person of Dr. George M. Sternberg, our president in 1886.

The Association from its inception has taken a broad view of its duties to the public, and has established an enviable record for public service. At the third Annual Meeting, held in Philadelphia, the following resolution was adopted:

That a committee consisting of a member of this Association from each state and territory of the Union . . . be appointed to petition Congress, at its next session, to institute a bureau of health, to be located at Washington City, with a branch at the seat of each state and territorial government.

That this Association urge upon the governor and legislature of each and every state in the Union the importance of enacting laws creating state boards of health and providing adequately for sanitary administration.

Five years later, in 1879, under the impending danger of a yellow fever epidemic, Congress created a National Board of Health,* which functioned for the term of four years provided for in the act creating it, but was allowed to pass out of existence by the next Congress, in spite of petitions showing the need of such a body, the excellent results achieved during its short life, and the importance of its continuance.

We have been more successful with the states, and there is now no state in the Union without some form of a health department.

MEMBERSHIP

With the growth of the Association, it became increasingly evident that its objects could be best attained by consultation and coöperation with our neighbors, whose problems were much the same as

*A review of the "Operations of the National Board of Health" is given in Volume VIII, page 71, of our *Transactions*, by Dr. J. L. Cabell, President.

our own, so at the St. Louis meeting, in 1884, Canada was invited to join with us, and became a constituent member—without question the most important measure taken since the formation of the Association.

At the Brooklyn meeting, in 1889, the secretary was instructed to communicate with the health authorities of Mexico, Central America, Cuba and Colombia, and invite these countries to coöperate in the work of the Association. Mexico alone responded, accepting the invitation, and at the Charleston meeting, in 1890, we had the honor of entertaining Dr. Domingo Orvañanos and Professor José L. Gomez as the official representatives of the Superior Board of Health of Mexico. In 1892, at the meeting in the City of Mexico, the amendment to the Constitution proposed in 1891 was adopted, and Mexico came into the Association fully. These two sister countries have added greatly to our strength, and have given many of our distinguished members and officers.

In 1902, at New Orleans, the newly formed Republic of Cuba was invited to associate with us, and for the first time practically the whole of North America was embraced in our membership, making us in fact, as in name, the American Public Health Association.

SECTIONS

The influence of bacteriology and the growing importance of laboratory work have been already referred to. Discoveries were announced in rapid succession. Laboratories rapidly became essential to health officers and boards of health for diagnostic purposes and the control of such utilities as water supplies.

Although the epidemic of cholera in London traced to the "Broad Street Pump" occurred as early as 1854, the typhoid outbreak at Lausen, Switzerland, in 1872, was the first to attract widespread attention to the danger of polluted water. Other outbreaks, such as those at Caterham and Red Hill, Eng-

land, in 1879, at Plymouth, Pennsylvania, in 1885, and at Lowell and Lawrence, Massachusetts, in 1890-91, had turned attention to the study of water supplies. The notable experiments in water purification instituted by the State Board of Health at Lawrence, Massachusetts, were designed and carried out largely by members of our Association, under the administration of our former president, Dr. Walcott. Many papers and discussions became too technical for the general meetings.

At the Montreal meeting, in 1894, Dr. Wyatt Johnston called attention to the desirability of having more uniform methods for the conduct of laboratory work. The result was that a sub-committee of the Committee on Pollution of Water Supplies issued a call for a convention of American bacteriologists, which met in New York in June, 1895. A committee was appointed to draw up procedures for the uniform study of bacteria and the differentiation of species. This committee reported at Philadelphia, in 1897, and the report was published in 1898—the first of the various "Standard Methods" now published by the Association.

A further result of this convention was the appointment of a Committee on Laboratory Work and Methods, at the Ottawa meeting in 1898, with Dr. Wyatt Johnston as chairman. In 1899, at the Minneapolis meeting, this committee reported and was discharged, its functions being taken over by the Section on Bacteriology and Chemistry organized at this time. Nearly one hundred enrolled in the new section at once, of whom approximately half were new members of the Association.

The section has always devoted much attention to the standardization and improvement of laboratory methods, and its publications are regarded as official throughout the countries of North America.

The scope of public health was rapidly widening during these years, and the

growth of the Association kept pace with it. New members with new points of view were constantly joining our ranks, and specialism was inevitable. In 1908 two new sections were organized, Vital Statistics and Public Health Administration. Three years later it became necessary to further specialize, and again, in 1911, two new sections were organized, Sociological and Sanitary Engineering. In 1914 the Section on Industrial Hygiene was formed, and that on Food and Drugs in 1917. If time and space permitted it would be most interesting to review the genesis of all the sections. They were preceded by special committees and reports, which gave evidence of the growth of the public-health idea, as well as the sense of duty to the public which has always actuated our Association. All sections were formed in response to demands which could not be put aside. At present there are requests before us for the formation of still other sections, most of which have a basis of valid claims on our attention, and with the further growth of the Association we must soon expect to see the number of sections increased.

PUBLICATIONS

Until 1895 the proceedings of the Association, together with the reports and papers presented at the meetings, were published as an annual volume under the title *Public Health, Reports and Papers of the American Public Health Association*. From 1895 to 1898, inclusive, they were published as a quarterly, entitled, *Journal of the American Public Health Association*, the original title and serial number being retained for the annual volume. In 1899 the annual volume was returned to, and continued until 1908, except that for three volumes, two in 1905, and one in 1906, the papers of the Laboratory Section were published by the *Journal of Infectious Diseases*, and bound as Part II of Volumes XXX, XXXI, and XXXII; and for one volume, 1907, these papers were printed by the *Ameri-*

can Journal of Public Hygiene, and bound as Part II of Volume XXXIII. In 1908, beginning with Volume XXXIV, our papers were published by the *American Journal of Public Hygiene*, which became the official organ of the Association, and this was continued until the establishment, in 1911, of our own periodical, the JOURNAL OF THE AMERICAN PUBLIC HEALTH ASSOCIATION.

There are 37 volumes of our transactions, reports and papers under the original title. Of these, Volumes XXXIV and XXXV are reprinted from the *American Journal of Public Hygiene*, and XXXVI and XXXVII from the JOURNAL of our Association, which continued the *American Journal of Public Hygiene*. During the first twenty-five years of our existence we published twenty-two volumes, containing 695 papers and 9,117 pages of reading matter. From 1897 to 1911, when the JOURNAL was begun, 13 volumes were issued, containing 827 papers and 6,826 pages. The ten volumes of the JOURNAL completed to date, 1911 to 1920, contain 1,106 articles, 136 reports, 229 editorials, and 11,379 pages, making a total of 2,993 articles and 27,322 pages of literature on health, in which every phase of the subject has been discussed by specialists and experts. These pages are not only a mine of information, but also a good history of the public-health movement during the past fifty years. The reports of committees and papers read leave no matter of interest untouched. Our general meetings have been the forum before which many epoch-making discoveries have been presented or discussed. The volumes are in demand for libraries, and it is now very difficult to obtain full sets. A review of them would be most interesting and proper in this address, but the several fifty-year histories on public-health topics which are to be presented at this meeting and published in our Jubilee Volume will doubtless cover much of the same ground, so that only a few points will be noted here.

As it were a beacon to guide the young Association, the first volume contains a paper by F. A. P. Bernard, LL.D., president of Columbia College, New York City, on "The Germ Theory of Disease and Its Relation to Hygiene," giving an excellent presentation of the new discoveries and ideas concerning disease. Although written by a non-medical man, it was in advance of much of the medical opinion of the day, since it was followed by papers on "Sewer Gas as a Cause of Scarlet Fever and Typho-Malarial Diseases"; "Does Smallpox Become Epidemic, or Spread Only by Its Own Contagion?"; "Gases of Decay and the Harm They Cause in Dwellings," and others of the same type, especially concerning yellow fever.

In comparing the earlier volumes with those of to-day, one is struck by the fact that the most important topics discussed in the early years are scarcely ever mentioned now. The first volume, published in 1873, is given up largely to yellow fever and cholera. One finds it hard to believe that cholera was at that time widespread in the United States, and that it existed in more than two hundred towns and cities of the Mississippi Valley.

Year after year we find pages devoted to the discussion of yellow fever, with many diverse theories as to its origin and propagation, such, for instance, as that it originated *de novo* in the cities of America; that the cause was cumulative and due to uncleaned privy vaults; that it arose from bilge-water; that the body does not reproduce the poison of yellow fever; and that the poison may be developed by adding one or more of the excretions of the patient to decomposing organic matter under well-known conditions.

These discussions were set at rest for all time in a paper read at our Indianapolis meeting in 1900, by Dr. Walter Reed, entitled, "The Etiology of Yellow Fever: A Preliminary Note." We feel a justifiable pride in knowing that the discover-

ies therein detailed were the result of studies made by one of our former presidents, Dr. Carlos J. Finlay, and our honored fellow-member, Dr. Walter Reed, who, with Doctors Lazear, Carroll, and Agramonte, gave the final proofs. It is impossible to praise too highly the scientific acumen displayed, or the devotion to duty which led these men to place their lives in jeopardy by experimenting on themselves, one, Dr. Jesse W. Lazear, making the supreme sacrifice as a result.

Only those of Southern birth or Southern residence can fully appreciate what this discovery has meant. In his presidential address on our twenty-fifth anniversary, Dr. H. B. Horlbeck urged that the President of the United States be requested to send a commission of expert bacteriologists to Havana and Rio to study yellow fever. Three years later the method of transmission was proved, and the disease was rapidly brought under control. The causative germ for years eluded discovery, but apparently has recently been cultivated by Dr. Hideyo Noguchi. Yellow fever was first brought into the United States in 1693, and for more than two hundred years was the terror of the South. Our pages show what the disease has meant to our country, and an especially graphic portrayal may be found in a speech by Dr. Joseph Holt, president of the Louisiana Board of Health in 1886. We can at this time scarcely understand the justification of the "shot-gun quarantine" which yellow fever outbreaks brought into being. That human nature does not change very rapidly is shown by the action of the authorities of Aberdeen in 1585, who erected gibbets,—

One at the nearest cross, one other at the Brig of Dee, and the third at Haven Mouth, that in case any infectit person might arrive or repair by sea or land to this brough, or in case any indweller of this brough receive, house or harbor, or give meat or drink to the infectit person or persons, the man to be hangit, and the woman to be drownit.

The meeting at Buffalo, in 1896, was made notable by the paper of Dr. Wyatt

Johnston of Montreal, "On the Application of the Serum Diagnosis of Typhoid Fever to the Requirements of Public Health Laboratories." He demonstrated there for the first time the feasibility of sending blood dried on paper long distances through the mails, and making correct diagnoses in cases of suspected typhoid fever, a practice now common in every public-health laboratory.

I cannot but pause here a moment to pay tribute to Dr. Johnston in recognition of his services to the Association and to the cause of public health. His early death took from us one of our most useful and brilliant members, and cut short a scientific career already notable and full of promise.

Lomb Prize Essays

In 1884, Mr. Henry Lomb, of Rochester, New York, set an example which we wish might have been followed by others, by offering \$2,000 to be awarded as prizes for essays on subjects selected by himself.

The contest attracted wide attention, and more than fifty essays were sent in, coming from foreign countries as well as America.

The awards were made at the Washington meeting, in 1885, as follows:

1. Healthy Homes and Food for the Working Classes, by Victor C. Vaughan, Ann Arbor, Michigan.
2. The Sanitary Conditions and Necessities of School-Houses and School-Life, by D. F. Lincoln, Boston, Massachusetts.
3. Disinfection and Individual Prophylaxis against Infectious Diseases, by George M. Sternberg, Washington, D. C.
4. Preventable Causes of Disease, Injury and Death in American Manufactories and Work-Shops, and the Best Means and Appliances for Preventing and Avoiding Them, by George H. Ireland, Springfield, Mass.

These *Essays* were published as a separate volume and went through three edi-

tions. The essay of Dr. Sternberg was revised and enlarged, and published in our *Transactions*, Volume XXV, 1889. For many years it was the leading work on disinfection in the English language.

In recognition of his services, Mr. Lomb was made a life member of the Association.

Journal

For many years the need of a medium for frequent communication between workers in the field of public health had been felt. Neither the annual volume, the quarterly publication, nor the affiliation with the *American Journal of Public Hygiene* had satisfactorily filled this need, which was becoming increasingly urgent as the field of health work enlarged and the number of workers increased. At the Milwaukee meeting, in 1910, a resolution was adopted creating a Committee on Journal, authorizing and directing this committee to provide for the publication of a monthly journal. The first number was issued in January, 1911, under the title JOURNAL OF THE AMERICAN PUBLIC HEALTH ASSOCIATION. In 1912 the name was changed to AMERICAN JOURNAL OF PUBLIC HEALTH which it still retains.* From the beginning it has taken a leading position among scientific journals, and the premier place among those devoted to health. Its value to the Association cannot be estimated, keeping our members in touch with the organization during

*In 1891 a quarterly was established, entitled, *Journal of the Massachusetts Association of Boards of Health*, the first number of which appeared in January of that year, published by W. S. French, Newton, Massachusetts, who was probably also the editor. It was the official organ of the organization from which it took its name. Dr. Samuel H. Durgin, president of the A. P. H. A. in 1902, became editor in 1903. The next year Dr. H. W. Hill became managing editor, and under the direction of Doctors Durgin and Hill the *Journal* grew and extended its usefulness. In 1904, Volume XIV, No. 4, it became the *American Journal of Public Hygiene*, still retaining its function as the official organ of the Massachusetts Association of Boards of Health. In 1907 it became the official organ of the Laboratory Section of the A. P. H. A., and in 1908 of the Association, including the new sections on Municipal Health Officers and Vital Statistics. In 1911 the new JOURNAL OF THE AMERICAN PUBLIC HEALTH ASSOCIATION continued as the AMERICAN JOURNAL OF PUBLIC HEALTH.

I am indebted to Dr. Victor H. Bassett, of Savannah, Ga., for much of this record.

the intervals between the annual meetings, and giving them during the year information of the new and important developments in public health. Since its foundation it has replaced the annual volume for the publication of reports and papers.

Since March, 1919, a monthly *News Letter* has been issued. To date 112,774 copies have been distributed.

Standard Methods

The Association has from its inception striven for the adoption of uniform practices and standard methods. It has for many years had various committees at work, constantly trying out methods and selecting the best. As a result, we have published the following:

"Standard Methods for the Examination of Water and Sewage." The predecessor, and really the first edition of this publication, was the report of the committee appointed in 1895 to draw up procedures for the uniform study of bacteria, adopted at the Philadelphia meeting in 1897, and published in Volume XXIII, 1898, of our *Transactions*. In 1899 a committee was appointed with the view of extending the standard procedures to include not only determination of species of bacteria, but all other lines of investigation involved in the analysis of water. Progress reports were made in 1900, 1901, and 1902, two of which were published in our *Transactions* and one in *Science*. The final report was published in 1905, as Part II, Volume XXX, of our *Transactions*. Revision has been constant, and other editions have appeared in 1912, 1917, and 1920. The fourth edition was revised by committees of the American Public Health Association, American Chemical Society, and referees of the Association of Official Agricultural Chemists.

"Standard Methods for the Bacteriological Examination of Milk," first edition, 1910; second, 1916; third, 1920. The third edition was revised in conjunction with committees from the

American Dairy Science Association, International Association of Dairy and Milk Inspectors, and members of committees from the Society of American Bacteriologists and American Association of Medical Milk Commissions.

"Standard Methods for the Examination of Air," first report, 1909; second, 1912; third, 1916.

"Pasteurization of Milk," 1920. Report of Committee on Milk Supply of the Sanitary Engineering Section.

"Model Health Code for Cities," 1921. Report of Committee on Model Health Legislation.

"Standardization of Public Health Training," 1921. Report of the Committee of Sixteen.

"An Index for Public Health Literature."

"Health Quotations."

THE PRESENT AND THE FUTURE

Our Association is at a critical stage of its existence. As a necessary part of our growth, we have assumed many obligations, while others have been thrust upon us. We have outgrown the period when one of our members could manage our affairs from his own home or office. We have taken our place along with other great national societies, with a whole-time secretary, who is also editor of our JOURNAL, an associate editor, and an office staff. The demands upon us are constantly increasing, as a result of our growth and extending influence. It is a sign of health on which we must congratulate ourselves. Nevertheless, a greatly increased income is required to keep pace with our responsibilities.

The high cost of living has been keenly felt by us directly and indirectly. The cost of publication of our JOURNAL and *News Letter* has doubled. Salaries have of necessity been increased, though still below what they should be. In May of this year we moved our offices to New York, joining with some dozen other national organizations in leasing space in the Penn Terminal Building. Although

the move increased our expenses considerably, we believe that the close association with other societies has advantages which will prove more than compensatory. New York is our great center of life and human interests, a city visited by many thousands throughout the year, and it is our hope that new interest will be aroused in our members by having our headquarters easily accessible to visitors from all parts of the country.

The urgent need of the Association is a greatly increased income. The most obvious method of obtaining this is by enlarging our membership, though it must be pointed out that for several years past the membership dues have added but little to our net income, since almost the entire amount is spent in service to the members. Drives for new members have in the past been successful, and our membership has increased in a most gratifying manner. The business depression of the past year has prevented us from making any extended effort to gain members, and has caused many resignations. Specialism in public health, which is much in evidence, is also a menace to our membership, since new societies are constantly being formed having for their object the consideration of some special branch of preventive medicine now represented by a section of our Association. "The platform of the Association is, in length, breadth, and thickness, sufficient to accommodate all who are interested in human conservation." (Rankin.)

Health is not the monopoly of any group or class. It is the common heritage, and should be the common property of all, and one of the objects most dear to the heart of our Association is to give to everyone the store of knowledge we now possess. It is true to-day, as in the time of Hosea, that "people are destroyed for lack of knowledge." For some years we have been trying to finance a popular health journal, written in non-technical language, which would present to the public in attractive form and style those facts of life and good liv-

ing which should be known to all. We have not yet succeeded, nor have we been able to interest any philanthropist in the plan. Perhaps the very broadness of our platform is an inherent weakness. It is generally easy to obtain money for the relief of suffering but hard to get it for the prevention of that same suffering. Some other societies which concentrate their efforts on the prevention of a single disease have been more fortunate in enlisting the interest of wealthy persons.

When Mr. Lomb gave the money for his *Prize Essays*, he said: "I see what you want. You have an abundance of light, but your light must be hidden under a bushel because you have no means to disseminate it. I propose to assist you, if it is acceptable." We continue to hope that some far-sighted philanthropist may be brought to appreciate the opportunities offered in this field, which has up to the present remained fallow. Thus financed we are confident that the JOURNAL would soon become not only self-supporting, but a handsome source of revenue, furnishing much needed funds for the extension of our activities.

We were born at an opportune moment, and have lived in a period which for all time will be remarkable for its scientific achievement. "For countless generations the prophets and kings of humanity have desired to see the things which men have seen, and to hear things which men have heard, in the course of this wonderful nineteenth century. . . . In the fullness of time, long expected, long delayed, at last science emptied upon him, from the horn of Amalthea blessings which cannot be enumerated, blessings which have made the century forever memorable; and which have followed each other with a rapidity so bewildering that we know not what next to expect." (Osler.) It is good to have lived in such a period, but it is better to have taken an active part in the events which have made that period notable, and this we can with confidence claim, especially as regards the biological sciences,

the unravelling of whose mysteries has meant so much to human welfare and happiness.

The Association has had a glorious past of service to the countries represented in its membership, and to mankind. In 1890, with less than 550 members, it was rated as "the largest and most influential organization in the world in shaping public-health opinions." That we have maintained this position, I am confident. The five thousand who now share the privilege of membership are the trustees of the future. We owe a debt to those who have wrought and passed on, which can best be paid by maintaining the standards set by them and by following their example of unselfish devotion to the welfare of our beloved Association.

We cannot, if we would, stand still and point to our past achievements *Noblesse oblige*. Our path leads forward, and the difficulties which confront us at this time must serve to stimulate our efforts to even greater accomplishment for the future.

The needs of the Association* were clearly and forcibly set forth by President Rankin last year. He showed the possibilities of a popular health magazine, and urged a change of attitude to the public. "The time is at hand," he said, "when the public are no longer to be thought of as beneficiaries in the public-health movement, but are to be trusted as participants." I can do no better than endorse these words, and urge that the Directors take active steps looking to the enlargement of our membership according to the general plan outlined, the chief features of which are a national parent organization, with state and county societies in close affiliation, all bound together by a common object—the conservation of human life—and kept in constant touch with each other through the medium of a great public-health magazine. So may we prove ourselves

worthy of our trusteeship, and erect to those who builded our Association and passed it into our hands a memorial worthy of their high aspirations.

In bringing this address to a close, it would be a grateful task to tell something of the history of those who have contributed conspicuously to the success of the Association. It has seemed possible, however, to do this only in the case of a number of our former presidents, and, with the single exception of Dr. Stephen Smith, our first president, the biographical sketches must be confined to those who are no longer with us.

If it should be felt by any that invidious distinctions have been made in speaking of some when all could not be included, I beg to remind such

"that in science, at least, great names are landmarks; and the owners of these names have traversed and gleaned in fields where many a devoted laborer has delved and sown, and pathetically sweated blood in his altruistic zeal. In science, at least, no man works in vain. Full many a one, worthy of an elegy, has given his whole life to establishing a fact or indeed only an item to a fact; his work unrealized, ridicule and even persecution oftentimes his only compensation, throughout perhaps in the meanest destitution, yet his life and his work have been absolutely essential to the building of a mighty fabric." (Huber).

The study of the lives of our past presidents has been an inspiration, but has brought home to me a keen sense of my unworthiness to succeed them and of my inability to fill the office once held by them. Dear to me as is the honor of presiding at this fiftieth anniversary meeting, I have many times wished that this tribute might have been written by a more facile pen, and one capable of paying adequate homage to their lives and accomplishments. Whatever may be lacking in expression I trust is made up for by the love and reverence which have prompted my hand.

It is rare for a society to be fortunate enough to have present at the celebration of its fiftieth birthday its first president. Such is our good fortune. We have at this meeting the man we delight to honor

*AMERICAN JOURNAL OF PUBLIC HEALTH, April, 1920, p. 297.

above all others, the man to whom, more than to any other, we owe our existence, our founder and first president, who charted our course and stood at the wheel during the early years of our voyage, who stands today an example of all that our Association holds most dear, a

man pre-eminent both as a citizen and a sanitarian, Dr. Stephen Smith.†

†The remainder of the presidential address, which is devoted to biographical sketches of Dr. Smith and of the presidents of the A. P. H. A. who are now deceased, cannot be included in the JOURNAL, but is printed in full in the Jubilee Volume, *A Half-Century of Public Health*, Mazyck P. Ravenel, M.D., editor.



WATCH FOR THE REPORTS OF THE SEMICENTENNIAL MEETING

The December issue of the JOURNAL has been arranged primarily with the object of bringing to the members in printed form as many as possible of the more important and timely papers and committee reports presented at the Fiftieth Annual Meeting in New York City last month.

For economy of space, only those historical papers presented at the general sessions are published in the JOURNAL which are not printed elsewhere. With the exception of part of the presidential address, therefore, the reader is referred to the Jubilee Historical Volume for several of the half-century reviews in specific fields.

Abstracts of the business transactions of the Board of Directors and of the various sections will appear in the December issue of the News Letter, out December 28. Information of timely interest and a retrospect of the annual meeting will be published in this number.

In the January issue of the JOURNAL, to be published January 7, will be published another group of very important annual-meeting papers and reports, together with the resolutions adopted by the Association and certain of the sections.

Future issues of the News Letter will contain the revised list of Association committees, the new constitution of the A. P. H. A., the proposed model constitution for the sections, and other matters of primary interest to the members, while the JOURNAL will continue its policy of publishing the scientific papers of the annual meeting as rapidly and as impartially as possible.

THE RELATIONS OF BACTERIOLOGY TO THE PUBLIC HEALTH MOVEMENT SINCE 1872

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Read at the Second General Session of the American Public Health Association, at the Fiftieth Annual Meeting, New York City, November 16, 1921.

WHEN so much remains to be discovered and accomplished it may seem but a mode of idling away twenty minutes to spend the time in casting a glance back over the bacteriology of the last fifty years. A survey of past progress is, however, essentially something more than a mere enumeration of discoveries or a recounting of practical triumphs, impressive and momentous as these may have been; it is the examination of the foundation of the superstructure upon which we are all builders. The attitude of the investigator has never been better expressed than in Pasteur's letter to his father: "God grant that by my persevering labor I may bring a little stone to the frail and ill-assured edifice of our knowledge of those deep mysteries of life and death, where all our intellects have so lamentably failed."

It is the most any one can do to add a little stone or a little mortar to the vast structure of natural knowledge. Oftentimes, however, stones laid by earlier builders, quite as careful and conscientious as ourselves, prove to be out of the true line, and the walls must be torn down and replaced, or the mortar crumbles, and a whole section of the building sinks under our feet. In any event, the foundations on which we build are and must be of perennial interest to us, and will continue to be examined at frequent intervals with anxious care by many scientific workers. To answer the question: Where do we go next? we must know where we stand now.

Already in 1872 the outlines of the new science of bacteriology were taking shape. Pasteur had carried out his epoch-making researches on putrefaction, fermentation, and spontaneous gener-

ation. He had demonstrated the share of living microorganisms in deep-seated chemical changes hitherto deemed due to some sort of mysterious molecular transmission. He had shown that particular kinds of fermentation were accompanied by particular kinds of microorganisms. Perhaps most important of all, he had given the death-blow to the doctrine of spontaneous generation as then conceived. Pasteur had furthermore traced a disastrous disease of silk-worms to a parasitic origin and had pointed out a practical method of prevention. Before this time, too, the clear-sighted anatomist, Henle (1809-1885), had not only called attention to some striking analogies that seemed to favor the doctrine of a *contagium vivum*, but had outlined with great precision the paths along which experimentation must proceed in order to obtain proof of this doctrine. It is fair to presume that Henle's cogent mode of reasoning was not without its influence on his pupil, Robert Koch.

Before 1872, also, specific microorganisms had come to be definitely associated in the minds of some investigators with certain diseases of man and of domestic animals. The anthrax bacillus had been observed by Pollender as early as 1849, and had been declared by Davaine in 1863 to stand in causal relation with splenic fever; the spirochete of relapsing fever had been seen by Obermeier in 1868. In the years just before 1872 particular interest had been excited in the terrible suppurating war wounds of the Franco-Prussian war, and the observation that numerous bacteria were present in the disintegrating tissues had been made by Rindfleisch, Recklinghausen, Waldeyer, Klebs and others.

Practical results had already begun to flow from such observations. Lister, stimulated particularly by the work of Pasteur, had first used in March, 1865, a crude form of carbolic acid for a compound fracture, and in May, 1866, he had his first great and unquestionable success. In a letter to his father dated May 27, 1866, he writes:

"There is one of my cases at the Infirmary which I am sure will interest thee. It is one of compound fracture of the leg; with a wound of considerable size and accompanied by great bruising, and great effusion of blood into the substance of the limb causing great swelling. Though hardly expecting success, I tried the application of carbolic acid to the wound, to prevent decomposition of the blood, and so avoid the fearful mischief of suppuration throughout the limb. Well, it is now eight days since the accident, and the patient has been going on exactly as if there were no external wound—that is, as if the fracture were a simple one. His appetite, sleep, etc., good, and the limb daily diminishing in size, while there is no appearance whatever of any matter forming. Thus a most dangerous accident seems to have been entirely deprived of its dangerous element."

The new knowledge made its way slowly. Dr. Keen points out that little attention was paid to it in this country until Lister visited the Centennial Exhibition in Philadelphia in 1876, and read a paper on the antiseptic method before the section on surgery of the International Medical Congress where its reception "was anything but enthusiastic." Keen himself, however, became an ardent convert. "At that time I heard him (Lister) and became fully convinced of the truth of the 'germ theory' and of the value of his antiseptic method. When I went on duty at St. Mary's Hospital, October 1, 1876, I adopted the system (and was the first surgeon in Philadelphia to do so) and have never abandoned

it. For me it changed surgery from purgatory to paradise."

Ordinary infectious disease, however, was still supposed by many to originate *de novo* without any connection with a preëxisting case. In 1876 an experienced physician could write as follows to Dr. H. I. Bowditch, in connection with the latter's Centennial Survey of the State of Public Hygiene in America. "A practice of thirty years, mostly in isolated country farmhouses to which every visitant could be readily traced, has convinced me that typhoid fever, scarlatina, etc., originated *de novo*, as well as from contagion or miasm, proceeding from the sick. I know I once saw a case of typhoid fever and a case of typhus fever originate within a week of each other, in a house with bad hygiene, situated alone in the woods, with only a few new acres cleared about it, and with no possibility of importation or previous deposition of buds, germs, etc." (p. 264).

No mention whatever is made of bacteria or bacteriology in Bowditch's centennial discourse on the "State of Public Hygiene in America" in 1876. In the published treatise there is but one reference in the index to the germ theory, and this is in a discussion of yellow fever in which it is stated that "the germ theory as applied to yellow fever is adopted only provisionally." As late as 1882, in a discussion on "Listerism" in the American Surgical Association, one speaker declared that "the germ theory is at fault and furnishes a very unstable foundation for a system of wound treatment," and another eminent American surgeon stated flatly that he did not believe bacteria were the cause of suppuration.

It is quite evident that in 1872 no science of bacteriology could be said to exist, since the fundamental tenets of the science were categorically denied by a considerable body of scientific workers. As pointed out by Keen, the first use of

the word "bacteriology" apparently dates from 1884. The earliest courses in bacteriology in American colleges and universities did not begin until about 1884-1885. It may be added that in 1872 only four states of the Union (California, Massachusetts, Minnesota, Virginia) had established boards of health.

If we examine the reason for this period of lag in the development of the new science, we find that it was due in large measure to the difficulties of working out a suitable technique. The oft-quoted saying of Cuvier that "the first question in science is always a question of method" is well illustrated in the history of bacteriology. So long as it was difficult or impossible to identify and study bacteria in pure culture, one biological species or variety or race unmixed with another, so long was it impossible to attain any approach to scientific definiteness. It is difficult for us to-day to realize the fog of uncertainty that hung over much of the early work with bacteria and to understand the reluctance that even good observers felt to accept at their face value the results of animal experimentation. Nägeli himself, who had shown convincingly that the active agents in infection could not be gases but must necessarily be organized bodies, who overthrew Cohn's assertion that bacteria could pass into the air with evaporating water, and who emphasized that in the phenomena of infection not only the infecting virus, but the infected organism must be considered, let himself be drawn into a maze of bewilderment concerning the transformation and transmutation of microorganisms, so that his ideas about the spread of infection, about disinfection, and about the significance of water and soil became hopelessly involved and mistaken.

"I have for ten years," says Nägeli, "carefully investigated thousands of bacterial forms, and if my view is right, then the same species, in the course of a generation assumes different, changeable, morphologically and physiologically un-

like forms, which in the course of years and decades of years, causes now the souring of milk, now the formation of butyric acid in sauerkraut, now the viscous fermentation of wine, now putrefaction, now the red coloration of starchy substances and induces now typhoid fever, now intermittent fever, now cholera."

What was the reason for this confusion and obscurity which so retarded the progress of bacteriology for a decade or more? It was primarily the lack of suitable methods for readily isolating and maintaining bacteria in pure culture. The decade, 1872-1881, although marked by the publication in 1876 of Koch's memorable work on anthrax, was largely a period of groping hesitation, but in the year 1881 Koch's greatest achievement, his invention of the poured plate method, gave that tremendous impetus to the investigation of disease of which we still feel the force. In rapid succession came the discovery of the bacilli of tuberculosis, typhoid fever, diphtheria, and other common and widespread diseases, of the micrococci of ordinary suppuration and of gonorrhea, of the vibrio of Asiatic cholera, and of many other microorganisms still to-day regarded as bearing a specific causal relation to a specific disease. One ironic observer has remarked of this period that for a time it became a kind of parlor game to demonstrate the "cause of disease" in pure culture. At all events, it is clear that the amazing bacteriological activity of the eighties and nineties was due essentially to an increased ability to differentiate and experiment with definite kinds of bacteria.

It is interesting to note the perpetual recurrence of scientific problems in a new form. To-day, after forty years of brilliant bacteriological investigation, some of us are troubled by the same perplexities that beset the investigators of the seventies. The significance of the so-called immunological varieties of microorganisms and of the phenomena of elective localization is still unsettled. To

what extent are waves of epidemic disease due to microbic variations and to what extent to fluctuation in the resistance of the human host? What are the limits of variation of the immunological races and types and upon what factors do variation and mutations depend? In view of the singular fidelity with which the great outbreaks of influenza resemble one another, is it fair to ascribe the recurrent pandemics to the sudden coming into existence of a special new variety of the influenza microbe? These are all questions that have not yet been given a final answer.

Recent observations on the botulism bacilli incline us to interpret with caution our test-tube experiences with the permanency of immunological varieties. To-day we need, in much the same way as did the bacteriologists of the seventies, methods that will enable us to preserve and study the types of microorganism isolated from the animal body without changing essentially the characteristics these types possess when freshly obtained.

The phase of relatively easy demonstration of the relation of specific bacteria to disease came to a natural conclusion after ten to fifteen years, with the exhaustion of the problems susceptible of solution by the use of the first simple methods. Only the tough nuts remained to be cracked. Some of them, such as syphilis, African sleeping sickness, and yellow fever have since been cleared up, but others, such as smallpox, scarlet fever, measles, and rabies still remain.

In the full flush of their success in discovering the bacteria of typhoid, tuberculosis, diphtheria, and other common diseases, numerous scientific workers next turned their attention to modes of prevention. The new public-health movement came into being not long after this Association was founded. The attempts of the sanitarians of the first half of the nineteenth century were directed largely towards combating dirt, bad smells and

overcrowded and uncleanly living and working conditions; active endeavor now became transformed to the definite aim of preventing infection.

The course to be pursued seemed clear: germs caused disease, therefore germs must be destroyed. One of the first reactions to the new bacteriological knowledge was an orgy of disinfection. The odor of carbolic acid came to be thought almost a guarantee of protection against disease; in surgical operations powerful disinfectants were sometimes used to excess; the floating germs of the air were greatly feared, and received more than their share of attention; elaborate methods of room disinfection were worked out in the hope that they might lead to the suppression of infection, an expectation that has not been altogether realized. Although these attempts to destroy disease germs have not led to a final solution of all problems of disease prevention, it is well to remember that even if limited in application, they were and are based on a logical foundation. We have only to recall the brilliant success of water chlorination to appreciate the practical significance of destroying the germs of disease wherever this is feasible.

The fact that the method of germ destruction is not always applicable naturally suggests a recourse to methods for building up the resistance of the host, so that germs cannot grow in the body tissues, or, growing, have their effects neutralized. A second great development in the application of bacteriology to public health was ushered in when the production of diphtheria antitoxin in the early nineties focussed attention on the phenomena of immunity, and especially on the use of antitoxins and vaccines in preventing and curing disease. Several of the greatest triumphs in preventive medicine have been achieved in this field; mention may be made only of smallpox, diphtheria, and typhoid. But even here it is evident that infectious disease is not being altogether done away with by such procedures. Although the demonstration

that smallpox can be prevented by vaccination is convincing and of long standing, this disease is disturbingly frequent. In 1920 there were 57,978 cases of smallpox in twenty of the states of the Union. Vaccination against smallpox is diminishing in the country of its birth. In England and Wales, seventy-one per cent of the infants born in 1900 were vaccinated; in 1919 only forty per cent were vaccinated.

The mortality from diphtheria, which diminished greatly in the years immediately following the introduction of antitoxin treatment, has remained disappointingly high for the past ten years, in spite of the fact that bacteriological methods have facilitated correct diagnosis, have made possible a rational period of quarantine and isolation, have led to the detection of human carriers, have enabled us to distinguish between susceptible and immune children and have established a definite way of curing the disease. If in spite of all these weapons in our quiver diphtheria mortality is virtually holding its own, we must seek the explanation in some serious obstacle. Apparently we must face the fact that the majority of people, including some physicians and public-health workers, are unwilling to subject themselves or their children to slight pain or temporary inconvenience for the sake of acquiring resistance to an infection, the danger from which seems remote. The removal of this inertia or objection by a persistent campaign of education is the main hope for further advance in this direction.

It need hardly be emphasized that immunity at best is a relative and not an absolute condition, and that the acquisition of immunity on the part of the individual organism invites the evolution of greater invasiveness on the part of the parasite, so that conceivably a sort of endless naval armament competition may be set up, in which increasing strength of defensive armament is met with greater penetrative power.

A third and very potent influence that

bacteriology has had upon public-health progress is in the diffusion of knowledge about the causes of disease and about methods of avoiding infection. A generation ago highly speculative and indeed mystical explanations of the origin of disease were still current. Typhoid and diphtheria were attributed to bad plumbing, malaria to drinking swamp-water or breathing swamp-air, influenza to an all-pervading atmospheric condition which recurred at uncertain intervals. Some diseases now much dreaded, such as epidemic poliomyelitis, were hardly recognized to be of an infectious nature. Much of this vagueness has been swept away by minute and painstaking bacteriological investigation, so that the avenues by which disease germs enter the body are now generally known, the share of living human carriers in spreading disease is coming to be understood, the importance of focal infection in teeth and tonsils has been brought to light; the transmission of certain diseases by mosquitoes, lice, fleas, or ticks is matter of common knowledge and the methods of building up bodily resistance to infections like pulmonary tuberculosis are taught to school children.

A beginning has been made in evaluating the share that infections like syphilis, rheumatic fever, and scarlet fever have in producing serious injuries to the kidneys and blood vessels, which become especially manifest in later years. There is no doubt that acute and chronic infections of childhood and youth, although apparently recovered from, often sow the seeds of fatal maladies which cripple and destroy thousands in what should be the prime of life. The complexity of studies in this field may be illustrated by the difficulty in explaining the decline in mortality from acute rheumatism that has occurred during the past ten years, and the uncertainty in relating the apparent dependence of this disease on focal infection with Newsholme's observations on the occurrence of rheumatic fever in England in epidemic waves.

Finally, it cannot be forgotten that the share of the living parasite in producing disease is often quite subordinate to other factors which really determine the extent and nature of the invasive progress.

While much still remains to be discovered there can be no doubt that the acquisition and popularization of knowledge about sources and modes of infection have been some of the chief factors in the public-health progress of the past fifty years. The outcome of all this bacteriological research into methods of destroying disease germs, immunizing susceptible persons and educating individuals how to ward off infection is so familiar that it need hardly be dwelt on here. It may be summed up briefly.

In most civilized countries the total death-rate from all causes has diminished since 1872, so that it is now one-half or a little less than one-half what it was fifty years ago. The total mortality from the principal infectious diseases, however, including typhoid, diphtheria, and pulmonary tuberculosis, has been reduced in still higher ratio so that it is now about one-fifth of its former figure. Whatever may be thought about the biological wisdom of attempting to prolong for a few months or years the lives of congenitally weak babies—and strong social instincts urge us to this course—there can be little or no difference of opinion about the value to the community of the thousands of lives

saved from diphtheria, typhoid, tuberculosis and other definite infections of childhood and early adult life.

It may be pointed out finally that those infections whose mortality has shown relatively little change since 1872, are probably most of them infections entering through the respiratory tract—measles, whooping-cough, pneumonia, influenza—about which there are either great gaps in our knowledge or no adequately developed methods of community prevention. Water-borne, food-borne and insect-borne infections are mostly in the list of decreasing or vanishing diseases; sputum-borne infections for the most part have not been brought under control. The most conspicuous exception to this generalization, pulmonary tuberculosis, bears witness to the truth that endeavor in this field is not hopeless. The history of past progress indicates that bacteriological and epidemiological investigation of both the acute and mild respiratory infections is to-day one of our most urgent tasks.

If we were to try to sum up in one sentence the influence that bacteriology has had upon public-health practice in the past fifty years it would be to say that while progress on an empirical basis would doubtless have been made in any event, bacteriology has given precision and definiteness to every step, has led directly to the most important triumphs in preventing disease ever achieved by the human race and holds out much promise for the future.

Standard Railway Sanitary Code.—This reprint, made available for general distribution, takes up such points as transportation of persons having communicable diseases (with special attention to the chief diseases), the certifying of water and seeing to the care of containers, methods of cleaning and

disinfecting cars, special attention on the sanitation of cars while in service, including dining cars, the sanitary condition of railway stations, and the hygiene, construction and maintenance of railway construction camps.—*U. S. Public Health Report, No. 604.*

THE HISTORY OF PUBLIC HEALTH IN CUBA DURING THE PAST FIFTY YEARS

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Havana, Cuba

Read by Dr. A. J. McLaughlin before the Second General Session of the American Public Health Association, at the Fiftieth Annual Meeting, New York City, November 16, 1921.

THROUGH ignorance and other causes the island of Cuba, and especially the capital, the city of Havana, were considered unhealthy on account of the climate, and deadly to foreigners. The falsity of the first statement was completely shown by the climatological studies carried on, particularly by the one presented by the Rev. Mariano Cutierrez Lanza at the second scientific Pan-American Congress held in Washington in 1915. The injustice of the second is evidenced by the analysis of the vital statistics, particularly from the day that Gorgas put in execution Finlay's doctrines, which exiled the phantom of yellow fever.

The climate of Cuba has undergone no alteration whatever during these last years. On the other hand, the implantation of wise sanitary measures have placed the country at the level of the most advanced nations in these matters.

In order to appreciate this labor we must consider the growth of sanitation in Cuba during the last fifty years in the following three periods: (1) Colonial—until the end of Spanish sovereignty on January 1, 1899; (2) American—from that date until the establishment of the Republic on May 20, 1902, and (3) Cuban—from that moment to the present time.

THE COLONIAL PERIOD

At that time there was, properly speaking, no sanitary law of a general character, and the Spanish laws put in practice here were either only partially applied or many of their precepts modified.

There existed then a Superior Board of Health, also provincial and municipal boards, but only for the purpose of consultation with the authorities.

Besides those boards the medical sub-delegates acted as auxiliary administrative officers and devoted themselves to the supervision of the medical profession. There were also visiting vessel physicians, whose duties were similar to those of our marine sanitation in regard to quarantine functions. The isolation hospitals existed only nominally and did not fulfill the duties entrusted to them.

There were also special physicians who looked after prostitution, the isolation of the insane and penal institutions, and bath physicians. The service of special hygiene, under which name was included all matters relating to the regulation of prostitution served more for graft than for true venereal prophylaxis.

The isolation of the insane was carried on under unsatisfactory conditions, and the Mazorra Insane Asylum was a place where the demented patient was locked in, with no treatment for his mental ailment.

The penal institutions (jails and prisons) were not places for correction and social improvement, but merely places where wrongdoers were shut in to bring them out later converted into masters of crimes.

The bath physicians were created with the idea that our medicinal springs should be scientifically studied; they superintended thermal stations.

The municipal sanitary service, which was established in 1871, was created to give medical assistance to the injured at the houses of relief and at the homes of the patients, provided the patients were poor. This service included, besides, the morgue, where medico-legal autopsies were performed; physicians who acted as

medical experts before the courts of justice; the Aldecoa Hospital for the observation of the supposedly insane; the chemical and bromatological laboratory, and a disinfecting brigade, consisting of five men. The infirmaries of the jail and prison were used for the inmates of those institutions.

Vaccination against smallpox was efficiently carried on by official and private organizations. The official vaccination center, established by the Provincial Assembly of Havana, should be cited on account of its good works. Dr. Vicente Luis Ferrer, who practiced animal vaccination since 1868, and Drs. Domingo Cabrera Diaz Albertini, Porto and Jose Luis Ferrer should be mentioned as having done efficient vaccination work in their private practices.

The institute for the treatment of hydrophobia, founded by Dr. Juan Santos Fernandez as a part of the *Cronica Medico Quirurcica de la Habana*, was the first of its class in the new world and from that institution there emerged all our laboratory men.

Several hospitals were in existence during this period. There was San Felipe y Santiago, which replaced San Juan de Dios Hospital, and later became the magnificent Nuestra Senora de las Mercedes for men and San Francisco de Paula devoted to women. (Children did not have hospitals nor special wards for their assistance.) San Lazaro Hospital for lepers was another hospital. The unhygienic military hospital, El Principe, replaced in 1897 by the barracks known as Alfonso XII, converted later into Hospital Numero Uno, also was established. It has since been rebuilt and named General Calixto Garcia.

The sanatoria were private institutions for the medical assistance of the Spanish and foreign population, especially for those suffering with yellow fever and venereal troubles. Mention should be made of the Quinta del Rey, Garcini, Integridad Nacional, which afterwards became Los Angeles Hospital for the poor

whom the municipal barracks were insufficient to lodge; the Beneficia, Purisima Concepcion and Covadonga, which, respectively, were controlled and managed by Spanish societies known as the Centro Gallego, Centro de Dependientes and Centro Asturiano; the Gynecological Clinic of Dr. Casuso; Dr. Enrique Lopez' Polyclinic, Dr. Weiss' Obstetrical Clinic, and Dr. Mendez Capote's Surgical Clinic at Cardenas.

The cemeteries were the following: Espada's, where, on account of the saponification of the soil, the interments were made in special vaults (*nichos*) above the ground; the excellent Cristobal Colon's; the Baptist and the Chinese, not to mention other provisional ones now closed.

Food and water problems were frequent at the Pescaderia (sort of fish market), which was in the worst condition; at the Cristina, Tacon and Colon markets, all unhygienic, and the Bodegas (grocery stores), where all kinds of goods for daily use were sold.

Milk was sold either by bringing the cows to the doors of the residences or in cans in which it was subjected to all kinds of adulterations.

Water was obtained from wells—cisterns which collected rain water. It was obtained also from the "Zanja Real" (royal ditch), an open aqueduct with all possible contaminations, from the waterworks of Fernando VII and finally from the Albear Canal, which brings the water from the Vento springs to the city.

There was no drainage system whatever, the dwellings having latrines which contaminated them. Most of the streets were not paved at all. Inasmuch as the governing elements did not worry themselves about the public health, it is no wonder that the governed people should accept as something necessary the existence of yellow fever, smallpox and all the other transmissible and avoidable diseases, in spite of the protest of scientific men, particularly of those of good will who founded the Hygienic Society in or-

der to fight against sanitary neglect and who made known the principal problems related to public health.

AMERICAN PERIOD

At the beginning of this period, Cuba had just gone through the most tremendous crisis of her history. During the three years of the war for independence, in Havana alone 11,762 individuals died in the first year, 18,135 in the second and 21,252 in the third, making a total of 51,149, causing the respective death-rates of 50.98, 77.34 and 89.19 per 1,000.

The whole population was infected with malaria, and the exceedingly bad sanitary conditions that had existed previously became worse on account of the horrors of the reconcentration policy ordered by Weyler and the blockade during the Spanish-American War with its attendant misery and sickness.

The first sanitary measure under the American government was to clean the streets and public places. Major Davis formed a corps of medical inspectors to examine the houses and stores, and, in all, about 10,813 infected latrines were found.

On February 10, 1900, Gorgas displaced Davis and widened the scope of the sanitary works undertaken and the fight against yellow fever which had renewed its ravages. The sick were isolated and all that had contact with them were disinfected, but no positive results were obtained. Then the American commission, composed of Reed, Carroll, Lazear and Agramonte, verified the truth of the doctrines held by Finlay since 1881, that yellow fever was transmitted by the mosquito. Considering the experimental work already done, Gorgas abandoned the route he had followed till then and directed his campaign exclusively to fight and exterminate the mosquitoes. He succeeded, from February 4, 1901, when he began it, until September 28 of the same year, when the last

case occurred, in eradicating the disease which had been endemic in Havana ever since its importation from Vera Cruz in 1761.

The doctrines held by Finlay were applied by Major Gorgas and by General Leonard Wood, who, being physicians themselves, were fully able to appreciate them in their true and incomparable worth, and who, taking advantage of their teachings and applying their precepts, have covered with glory not only themselves but also the nation which sent them. They showed to the entire world the truth of what Finlay had been asserting with untiring tenacity since 1881—that is, that yellow fever could be suppressed by breaking the links in the chain represented by the mosquito transmitter of the disease from a sick man to a healthy one.

The appointment of the Yellow Fever Commission devoted to the purpose of obtaining diagnostic certainty in all the cases reported as suspected of yellow-fever contributed powerfully to this victory.

Another victory obtained in the same epoch was the extinction of smallpox, which has disappeared from Havana since July, 1900, thanks to obligatory vaccinations and revaccinations ordered by the board presided over by Dr. Valery Havard. During this period multiple orders were dictated on quarantine and immigration, farcy, prostitution, infectious diseases, markets, water sources, suppression of wells and other deposits where mosquitoes might be bred, on veterinary matters and medical practice, etc. But, chief of them all were the taking of the census, which resulted in knowing that the country had 1,572,797 inhabitants, and the promulgation of Order No. 159, dated May 17, 1902, by which the Superior and local boards of health were created all over the island, thus constituting our first sanitary code. Owing to prevalent ideas of the moment, the error was made of putting all these

sanitary services under the control of the municipalities.

CUBAN PERIOD

This begins with the establishment of the Republic on May 30, 1902, and it may be separated into three distinct parts: (1) from that date until September 29, 1906, when the provisional administration of the United States Government began; (2) during that period until the ruling power was entrusted anew to the Cubans on January 28, 1909, and (3) from that day, in which the Executive Department of Health and Charities was inaugurated until the present time.

During the first part, health matters were entrusted to the Superior Board of Health, the superior chief and the local boards of health of each of the several municipalities of the Republic. The vital statistics services were united, and thus the Superior Board was able to obtain statistics directly from the original documents signed by the attending physicians when they issued the death certificates. The *Manual of Sanitary Practice* was published. This was a scientific and administrative compendium regarding sanitary problems. The sanitary ordinances were drafted, and all the precepts that should be known by the governing elements and by the governed were published in a concise form.

At this time yellow fever reappeared in our country, imported from New Orleans, where it had been epidemic until 1907.

During the second part, Major Kean, fully aware of the faulty municipal organization for carrying out the sanitary precepts of Order No. 159 of May 17, 1902, brought about the nationalization of the services, entrusting them to a National Board of Health, a national executive officer and local officers, all under his immediate supervision.

Improvements were made in quarantine matters, immigration, quarantine hospitals, sanatoria hospitals, etc. Ha-

vana's drainage and pavement contract was signed together with those of other cities, and the Consultive Commission prepared the study and the code of the principal laws, through which was created the Executive Department of Health and Charity.

That is the beginning of the third part of this period, in which the Republic aimed again to carry on its destiny.

Dr. Matias Duque has the glory of being the first secretary of health, and to Cuba belongs the honor of this advanced step in matters of public health.

The organization of the department is in full compliance with Decree No. 894 of August 26, 1907, which nationalized the sanitary services of the Republic; but besides, there were added those corresponding to the old charity department, formerly subjected to special laws and to regulations dictated by the central board of charity, established during the first American intervention.

Six men have held the secretaryship since the foundation of the department: Dr. Matias Duque, who resigned on October 27, 1909; Dr. Manuel Varona Suarez, who held office from that date until May 20, 1913, when there was a change of administration; Dr. Enrique Nunez, who died in active service on September 16, 1916; his successor, Dr. Raimundo Menocal, who also died in office the following year, on August 1, 1917; Dr. Fernando Mendez Capote, appointed on account of his experience as director of charity, who resigned the office on May 20 of this year, and Dr. Juan Guiteras, an expert pilot in sanitary affairs, who has helped both as a member of the Commission of Infectious Diseases since 1900 (later serving as its president) at the side of Finlay and Gorgas, and who was Director of Health since that office was created in 1909. Undoubtedly he will be able to direct it safely from the secretaryship he holds.

During the Cuban period the Department has had to fight, besides the outbreak of yellow fever before mentioned,

two outbreaks of bubonic plague, slight outbreaks of epidemic cerebro-spinal meningitis and anterior poliomyelitis imported from the United States, and particularly the tremendous epidemic of grippe of 1918 which overran the whole world and the effects of which are still felt in the increase of general mortality.

Finlay introduced the use of antiseptic outfits for the dressing of the umbilical cord, and by that measure we have succeeded in obtaining a complete victory over that source of infection which yearly caused about four hundred deaths among the newly born, but which has now been wiped out from our vital statistics.

The death-rate, which in Spanish times was always above thirty per 1,000

in Havana, has come down to figures oscillating about twenty, having at one time (1912) reached as low as 18.10 per 1,000.

In the total for the island we do not have complete data, except since 1900, but from then on, with a death-rate of 17.82 per 1,000, it has descended to 12.96, one of the lowest registered in the entire world. This places Cuba above nearly all the nations in regard to health conditions, notwithstanding that the grippe pandemic raised the death-rate to 16.49, for it dropped in the following year to 14.30 per thousand inhabitants, which shows that Cuba, on account of its climate and its fine sanitary organization, is one of the most habitable places in the tropical regions.



PUBLIC HEALTH PROBLEMS IN MEXICO AND THEIR SOLUTION DURING THE LAST FIFTY YEARS

Abstracted from pamphlet of the same title and read by Dr. Francisco Castillo Najera before the Second General Session of the American Public Health Association, at the Fiftieth Annual Meeting, New York City, November 16, 1921.

GENERAL HISTORY

UNTIL the year 1872 the *Consejo Superior de Salubridad* functioned under the laws put into effect by former administrations. At that time the *Consejo* was the sole judge and arbiter on questions regarding physicians' fees and titles and had charge of all problems pertaining to the legal aspect of Medicine.

In 1872, with the idea of bettering the standing of the *Consejo*, the President of the Republic amended its powers and responsibilities. He took away its authority in matters concerning the right of practicing medicine and revising professional titles, but entrusted it with vaccination and the medical inspection of prostitutes, and increased its authority in matters of public health.

As soon as the *Consejo* was reorgan-

ized, it passed its first ordinance, which established birth registration and notification of deaths, visits to destitute patients, the compiling of vital statistics, food inspection and inspection of slaughter houses. It also revised certain laws concerning cemeteries. Later it began to initiate beneficial reforms in hospitals and charitable institutions, to organize food and drug inspection with the view of punishing falsification and adulteration, and started medical inspection of factories.

In 1885, Dr. Velasco, who had accomplished the first permanent organization of the *Consejo*, died and Dr. Licéaga took his place. He began the sanitation of cities and ports, established an institute for the prevention of rabies and began to organize a bacteriological laboratory.

In answer to an invitation extended by the American Public Health Association in 1889, the *Consejo* joined the Association. In 1890, Mexico for the first time sent its delegates to the meeting of the Association in Charleston, S. C.

In 1917 the *Consejo* became the *Departamento de Salubridad Pública*. On May 10, 1920, Dr. Gabriel Malda was appointed chief of the department and a little later Dr. Alfonso Pruneda was made general secretary. Since they have been in office the department has accomplished works of great importance, as may be seen by the following paragraphs.

VITAL STATISTICS

As already stated, the *Consejo Superior de Salubridad* began its work in 1872 by adopting regulations concerning birth and death registrations and by the organization of statistics. However, it was not until 1879 that Dr. Agustin Reyes presented a plan for the keeping of statistics which was adopted and used for several years.

At that time there was no census of Mexico City. The last one, taken in 1790, had shown it to be a city of 112,926 inhabitants. In 1879 Dr. Reyes estimated the population to be approximately 260,000 inhabitants. In 1890 the second census showed a population of 326,594. In 1910 the number had grown to 471,066. A new census has not yet been taken, but it is possible that the City of Mexico now has nearly a million inhabitants.

When the "Committee on Nomenclature and Form of Statistics" met in Montreal in 1894, the adoption of Dr. Bertillon's nomenclature for diseases and causes of death was proposed, with the purpose of making statistics of the different countries uniform so that they might be compared. As a result, in 1895 the President of Mexico declared the above named nomenclature adopted. Mexico has since adopted all the modifications approved by the international commissions that have made revisions in nomen-

clature and classification of causes of death, and has had representatives at each of the three congresses of 1900, 1910 and 1920.

The statistics pertaining to morbidity were first compiled in 1880 under a plan presented by Dr. N. Ramírez de Arellano.

In the Health Convention in 1905, Mexico in common with other nations promised to send out its statistics of mortality.

MORTALITY IN THE CITY OF MEXICO

Until 1901 the number of deaths in the city had been considered between 42 and 59 per thousand, an average of 49.4. Since 1902 the mortality rate has been between 40.6 and 57.3 per thousand, an average of 45.8. The death rate in recent years is less than in the years before, but it is not possible to estimate its average as no census has been taken since 1910. It is certain, however, that the mortality in the City of Mexico remains very high if we compare it with European and American cities of the same population.

The principal causes of death are:

1. *Pneumonia and Broncho-Pneumonia.* The revision of the mortality statistics from 1879 to 1920 shows that pneumonia caused 23.15 per cent of all deaths during that period. This may be due to our high geographical situation and to the sudden climatic changes to which we are exposed.

2. *Tuberculosis.* As early as 1890 Dr. Licéaga was engaged in preparing a paper to be presented to the International Congress at Berlin in which he told of the prevalence of tuberculosis in Mexico. Later in 1907 he strove to combat tuberculosis, and the following year at the Sixth International Tuberculosis Congress, which was the first to meet in America, he discussed the means of carrying on the campaign, and the advantage of placing the patients in fresh air camps or sanitariums. He also proposed

the establishment of dispensaries where suspected cases might be examined and instructed to follow treatment at home under the supervision of special nurses.

This disease, perhaps on account of better hygienic conditions, has decreased as a cause of death in Mexico, but is still a serious problem. A large sanitarium for the isolation and education of tuberculous patients is soon to be built.

3. *Typhus Fever*. This disease has prevailed endemically in the Anahuac Plateau since the most remote days, and presents epidemic outbreaks.

Dr. Ocaranza has found that in the City of Mexico there exists an endemic zone of typhus. There are also small shifting foci of infection in the city which are wiped out very rapidly. And there are cases, too, along certain street-car and bus lines which threaten to become permanent.

The prevention of typhus fever was long limited to the betterment of housing conditions and streets, and to the adoption of better water works and sewerage. Physicians are now compelled to report every case of typhus. In the general hospital, infected persons are isolated.

Since Dr. Pruneda and Dr. Ocaranza began to work in the *Departamento*, the principal prophylactic measure is the extermination of lice. Care of the sick has much to do with the prevention of the spread of the disease.

4. *Smallpox*. We have not reached the point where our statistics do not show heavy morbidity and mortality from this terrible plague. It is also an important cause of loss of vision, as will be shown later. Since the time the new sanitary authorities initiated their work, vaccination stations have been increased and we hope the disease will decrease and even be stamped out.

We should not forget that the measures against smallpox carried on in former years were effective also, as will be shown in the section on blindness caused by this infection.

INFANT MORTALITY

Infant mortality is still very high, amounting during the last thirty years to 25 per cent of the general mortality. It is impossible to state the ratio of infant deaths to live births, because as yet birth registration is somewhat irregular.

The details of mortality in the first year of life show that the parallelism between absolute infant mortality and mortality caused by the affections of the digestive tract is very remarkable. The affections of the respiratory system stand as a second cause of death.

Measles. This disease is much less serious in Mexico than in many other countries, especially in England and Scotland, and its role in infant mortality is very slight. I have found that, as in all countries, measles exists endemically in Mexico.

CAMPAIGN AGAINST SOME INFECTIOUS DISEASES

1. *Vaccination*. The vaccine was brought to the country in 1804 when a commission came from Coruña bringing with them 26 little children in order to keep the virus alive during the trip. At first the City Council was in charge of it but in the year 1872, the *Consejo* took the work of vaccination in its own hands. Dr. Velasco made compulsory the vaccination of children during the first six months of life.

For some years physicians differed as to whether humanized vaccine or animal vaccine should be used. The opinion of some noted physicians and the discussions in medical associations resulted in the establishment of an Instituto Vacunal, where people could be vaccinated with animal lymph at will. Now vaccination is carried on exclusively with animal lymph.

2. *Preventable Blindness*. According to statistics of the National School for the Blind (1870-1918), 52.58 per cent of the inmates had lost their sight on account of ophthalmia neonatorum, and

16.21 per cent as a result of smallpox. During the first years that the school was established, smallpox was the main factor in causing blindness, but it has diminished as a factor. Only in the most recent years have the cases of blindness on account of it increased. Ophthalmia neonatorum, which in the earlier years caused 30 per cent of blindness has increased until in 1910 to 1914 it reached the astounding figure of 75 per cent of cases. This was due to the fact that for a long time the prevention of this terrible disease was neglected, but recently there has been great activity in combating it, making it obligatory for physicians and midwives to report all cases. The small patients are treated in their homes by special personnel and nurses. The inspecting physicians visit the patients as often as necessary, and if the family is indigent the department takes care of the case free of charge.

The beneficial results of this campaign are clearly apparent. From December, 1920, to August, 1921, 45 cases were reported, 42 of which were completely cured, the remaining have curable lesions in both eyes.

To intensify this campaign midwives and the public in general have received instructions by means of conferences, pamphlets and posters.

3. *Yellow Fever*. Yellow fever has prevailed in the towns and cities of our seacoast for more than four centuries. From 400 years ago, Veracruz was visited by the epidemic every summer. It was not until 1903 that the campaign against yellow fever was started. It included the isolation of sick people and suspected ones; the destruction of infected mosquitoes found in the houses of the patients; the extermination of larvae of *Stegomyia fasciata* and obturation of the clean water deposits where they lay their eggs; destruction of the places where mosquitoes hibernate, and desiccation of lands.

The beneficial results of this campaign were felt the following year. From

October, 1901, to September, 1902, there were in Veracruz only 721 cases of yellow fever and 274 deaths from it. In 1904 there were in the whole Republic 201 cases and 98 deaths. In 1906 there were only 171 cases in the whole country.

At last in 1907, Veracruz reached the point where it did not register any cases of yellow fever during the summer, and in the whole country there were only four cases.

Last June the disease reappeared but, thanks to an active campaign carried on against it, it has greatly diminished. The Rockefeller Foundation gave very valuable services in this campaign.

The efficiency of the work carried on in Veracruz was demonstrated in the following case: Four infected people arrived in the city and yet gave rise to no more cases of yellow fever, a fact that may be due to the practical absence of mosquitoes.

The Department recently organized the First Yellow Fever Convention, to hear reports of all that has been accomplished against this disease since last January, and to discuss the plans of the campaign for the year 1922.

4. *Bubonic Plague*. In December, 1902, the plague made its appearance in the seaport of Mazatlán and was exterminated in six months. Last May the Department learned of some suspected cases of pest in Veracruz. Dr. González Fabela was sent to the infected city equipped with the best means for exterminating the epidemic.

The methods put in action included the isolation of actual and suspected cases; vaccination of the whole population; preventing people living in the infected houses; the improvement or destruction of houses in such condition as to shelter the rats and mice which disseminate the plague; the prevention of accumulation of dirt; and especially one energetic campaign against rats. The plague probably had reached Veracruz through infected rats from New Orleans. The first case

appeared May 22, and the last one October 20, 1920. There was a total of 61 cases. The plague appeared later in Tampico. The Institute of Hygiene prepared 69,640 c.c. of pest-vaccine, and the campaign against the disease was similar to that in Veracruz.

5. *Uncinariasis*. At the suggestion of Dr. A. B. Vasconcelos, it was decided to initiate a campaign against this disease which is quite prevalent throughout the Republic. Dr. Landa and Dr. Argüello have modeled the plan for this campaign on that used by the Rockefeller Institute in Central and South America.

6. *Rabies*. In 1887, three years after Pasteur had for the first time inoculated man with it, virus for rabies was brought to Mexico. Since then rabbits have been continually inoculated and several thousand people have been treated.

THE DRAINAGE OF THE VALLEY OF MEXICO

Mexico City is located in the lowest part of the valley and surrounded on all sides by mountains which obstruct the exit of waters from the rivers, rains, and the springs which gush from the lakes inside the valley. On account of these obstructions, when the heavy rains came the lakes, which are on a higher level, overflowed the city. Before the Conquest and through the colonial period this danger was the constant preoccupation of the authorities, who tried different ways of doing away with it. Their efforts, however, were inefficient and the great work of draining the valley was not planned for some time. The work was not begun till 1886 and it was finished in 1900 with an expense of about \$8,000,000.

This work prevents the inundation of the city, carries all the waste waters out of the valley and controls the waters in it.

CHILD WELFARE

It is hardly strange, perhaps, that we in Mexico have done so little for the

welfare of our children and the reduction of our high infant mortality when nations as cultured as France received their first lessons in these subjects from the United States during the world war. On September 11, 1921, however, at the initiative of Dr. Malda and Dr. Pruneda, the Department opened its first Baby Week. The patio and ground floor rooms of the administrative building were fitted up with ample booths for exhibits especially prepared for fathers and mothers on eugenics, pre-natal care, infant mortality, diseases of children, care of the baby, including clothing, feeding, bathing and sleeping arrangements, and care of the eyes and teeth. Other exhibits of great importance were those on milk, on flies, on the effect of poverty and defective housing on the children subjected to them, on the special disadvantages from which country children suffer, and on the welfare activities in operation in Mexico and in foreign countries with special reference to clinics and public health nurses.

Many practical demonstrations supplemented the posters and every day of the week had its special program.

The Department hopes to take advantage of the deep interest awakened this year to begin a permanent program for the welfare of the children of the country, and next year it will establish a division of child welfare.

PRESENT ORGANIZATION AND WORK

At the present time hygiene and public health are in the hands of the *Departamento de Salubridad Pública*. The old *Consejo* continues to exist as an advisory body within the Department and in some cases as executive board. Its authority in case of epidemics and in combating such social evils as alcoholism and the use of other drugs extends not only to the federal districts and territories, but to all the states as well.

The administrative affairs of the Department are in the hands of a secretariat. The president of the *Consejo* is

at the same time the chief of the department. The technical work is carried on by him as director and by some commissions formed by members of the *Consejo*.

For the fulfilment of all its labors, the Department had a budget of 2,570,000 pesos for this year. The actual president is Dr. Gabriel Malda and the general secretary, Dr. Alfonso Pruneda. Both have the same rank within the *Consejo Superior de Salubridad*, which consists, in addition, of the following men: Drs. Angel Brioso Vasconcelos, Francisco Castillo Nájera, Fernando Ocaranza, Nicolás Ramírez de Arellano, Alberto Román y Rafael Silva; the engineer, Ernesto P. Malda; the attorney, Antonio Ramos Pedrueza; the chemists, Ricardo Caturegli and Miguel Cordero; the veterinary physician, Eliseo Zendejas, and the general inspector of the Department, Dr. Jesús E. Monjarás.

The present directors of the Department are perfectly aware that only a long education will be effective in reducing our high mortality rate and increasing the average duration of life which at present is very short. It is undoubtedly true that only education will solve our hygienic problems and will give better health habits to our children.

But since all this cannot be learned through verbal lectures only, but requires practice and example, the Department decided on the creation of the Institute of Hygiene, where physicians, engineers, teachers, and others are given practical instruction in all subjects relating to scientific hygiene. The Institute trains

sanitary physicians and engineers, public-health officers and nurses for dispensaries, sanitariums and schools.

Relations between the Rockefeller Foundation and the Department become more and more cordial every day, especially since the Rockefeller Foundation has shown its friendship by lending its services for the campaign against yellow fever. It has also very good relations with the United States Public Health Service, which very kindly allowed Dr. Mitchel to come to Tampico to cooperate in the campaign against the bubonic plague.

By all that has been said, it may be seen that in Mexico, notwithstanding the difficulties that have arisen since her independence, hygiene and sanitation have been the constant preoccupation of the different governments, and, although Mexico cannot say that she has attained the progress that has been reached in other countries, it is only just to say that every effort has been made to reach that standard and our country is proud of having had such men as Drs. Alvarado, del Río, Velasco and Licéaga, who worked persistently to better the sanitary conditions of the country.

The increase of the activities of the Department began when Sr. Adolfo de la Huerta was temporary president of the Republic, and continued to progress greatly under the administration of General Alvaro Obregón. Both have shown a great deal of interest in the Department and have helped it in every possible way.

National Welfare Bureau in Saxony.—

In connection with the proposal for a new Department of Public Welfare in the United States, it is interesting to note that a National Welfare Bureau was established in Saxony by an order of March 18, 1921. According to the Weekly News Summary of the U. S. Children's Bureau of June 18,

1921, this new bureau is to administer the public welfare law of May 30, 1918. The purpose of the bureau is to coördinate and direct the public welfare work of the country, to regulate the training of welfare workers and to furnish information regarding matters coming within its province.

THE DEVELOPMENT OF THE BOARD OF HEALTH AND ITS RELATION TO THE PUBLIC

FRANCIS GEORGE CURTIS, M.D.

Health Officer, Newton, Mass.

Address of the Chairman, Public Health Administration Section, Fiftieth Annual Meeting, American Public Health Association, New York City, November 14, 1921

FEW of us who are here to-day were old enough to take any interest in public health at the time the American Public Health Association came into existence, and of those few, fewer still had any conception of what public health would come to mean or of the important part which it would hold to-day in public affairs.

In the early days of the Association, boards of health, as the phrase is now understood, were practically non-existent, and those which did exist had little or no standing with the public. Many of the functions which they exercised would hardly be recognized to-day as belonging to a board of health.

As a rule there was no board of health as a separate department, but its functions, when they were exercised at all, were carried out by the governing body, acting as a board of health or by a standing committee on health to which were referred such few matters as seemed necessary.

The chief duties of a board of health at that time consisted in recording births and deaths and sometimes cases of disease, and if any of you have had occasion to consult the records of your own or any other city at about the period under consideration, you know how meager and unsatisfactory they are.

As an illustration of the lack of interest taken in such matters, the following extract from the inaugural address of the mayor of a New England city, written about six years after the founding of the American Public Health Association, may be of interest:

The City Council last year refused any and all appropriations for health purposes, and in our city the subject has as yet received so little attention that it amounts to nothing; in fact, as a city, we have ignored all the applications of the State Board (of Health) for even such statistical information as is needed for the whole community and we have no officer capable of giving the information required.

It may be, as is claimed by some, that our city is, as yet, healthy enough. To this I reply, we need a person experienced and educated in such matters, whose entire time shall be devoted to *keeping* it healthy; procuring that vaults shall have proper ventilation; that drainage shall not find its way into wells, that stagnant pools of water and many other sources of peril to health shall be cured.

All of which shows that the writer, a layman, had fairly sound ideas upon the necessity of a full-time health officer. Cleaning vaults and cesspools and the collection of house offal garbage were very important duties of a board of health in those days. In the ordinances of a small New England city, adopted less than 25 years ago, and still in effect, the duties of the Board of Health are defined as follows:

The Board shall, subject to the authority of the mayor, make all contracts and regulations for the cleaning of all private cesspools, vaults, and privies, and all such contracts shall contain the condition that such work shall be performed to the satisfaction of the Board of Health.

The Board shall have charge of the collection of garbage and shall make such rules and regulations in relation thereto as said Board shall deem expedient.

There is no further reference to the Board of Health elsewhere in the document.

Even when separate boards of health began to come into existence more generally, they were not much better than the old health committees of the city council.

Any one who could be persuaded to accept an appointment was good enough to serve on the board of health no matter what his lack of qualifications might be. If there was a medical member he had almost to be forced to serve and usually lost caste among his colleagues and was severely criticized by them for consenting to take the appointment.

The theories of those times in regard to the causation of disease and the transmission of infection seem very curious to us now; people believed that "sewer gas" was a cause of disease, notably of diphtheria, and that infection lurked in rooms, articles of clothing, and other objects which had been in contact with the sick person and that they were capable of transmitting the disease to others after the lapse of long periods of time, sometimes even of years. They also believed that infection was transmitted through the air for long distances, even for miles.

An article on smallpox published about the time under consideration shows how that disease was more prevalent among those living on the lee side of smallpox hospitals than among those living to windward and attributes it to the fact that the infection was carried down wind by the prevailing breezes.

Because of these beliefs boards of health spent a great part of their energies in frightening people about the condition of their plumbing and directing their efforts to prevent the spread of disease through infected articles, by fumigating rooms and build-

ings in which a person had been ill with a communicable disease.

They quarantined a house in which there was a case of communicable disease, even placing armed guards around the building to prevent the inmates from breaking quarantine, but their chief efforts were directed against infected articles.

The Massachusetts law, as it exists to-day, directs the board of health to make "regulations . . . relative to articles which are capable of containing or conveying infection or contagion or of creating sickness . . ."

After a patient had been sick for a certain definite time, which, of course, varied with different diseases, he was considered to be well, no matter what his condition might be; the quarantine was raised, the house carefully fumigated and the patient allowed to go about and mingle freely with others.

If a secondary case developed, the public was sure that fumigation had not been done properly, and blamed the board of health for carelessness or neglect. So strongly was the belief in fumigation, as a controlling factor in preventing the spread of infection, implanted in the minds of every one, that boards of health frequently fumigated a school room or even the whole building, when one of the pupils was taken ill with a communicable disease, even though the sick one had not been at school for several days previous to his illness; the theory being that the disease was in the room or in some article therein; that the patient had caught his disease from it, and that others would also catch it, if it was not destroyed by fumigation.

This era lasted for nearly a quarter of a century after the founding of the American Public Health Association, and while we may now smile at its theories and the acts caused by them, we must remember that the men who did them were handicapped by lack of

knowledge and were further restrained by public opinion which demanded that they follow the accepted beliefs. He was a bold man in those days, who dared to act contrary to the general belief, and he faced disgrace and removal if he so acted and anything went wrong.

Service on a board of health was not a pleasant duty and often exposed the man who tried to do his duty fearlessly as he saw it, to criticism and abuse, nay, even to calumny and hatred. Yet in spite of these handicaps there were a certain number of men who really loved their work, who strove to do their duty and to solve the puzzling questions which confronted them almost daily in their work. They studied the facts which they saw and tried to correlate them with existing theories and began to realize that the latter were often unsatisfactory and must be modified or discarded and that new working hypotheses must be adopted.

In this way they tried to learn something about the laws of disease, and the methods by which infection was transmitted from person to person, and so, little by little, a fact here and a fact there, they added to their knowledge and began to lay the foundation of public health work as it exists to-day.

These men were the pioneers of public health. Some of them attained great reputations, and their names are familiar to us all; others, working in less fortunate surroundings, perhaps, are less widely known and are remembered only by a few who learned from them the facts and experience leading to success in their chosen work. Sometimes in looking through a dusty report, one comes on a sentence hidden in an almost unnoticed corner and realizes that here an unknown pioneer was doing his duty and recording his mite towards a better understanding of the laws governing health.

With the general acceptance of the germ theory, so-called, boards of health may be said to have entered upon a new phase of existence and to have acquired a better standing before the public. Bacteriology, epidemiology, sanitation in its broader sense, became parts of the equipment of boards of health, and they began to slough off the non-essentials.

They learned that sewer gas does not cause disease; that fomites play a minor part in the transmission of infection; that fumigation of rooms after disease was unnecessary and useless; and that the patient was not necessarily free from the danger of transmitting his disease to others just because a certain time had elapsed since he was taken sick. It began to dawn upon them that it was better to try to prevent disease than to try to stop it after it had once started, and preventive work soon became an important function of a board of health.

Protection of water supplies, of milk supplies, supervision of other sources of food supply, became part of the routine work of the health department, and while the care of communicable disease is still a very important part of the work and must so continue for a long time to come, it may not be too much to believe that it will become less and less important in the future, as preventive work becomes more effective.

One marked difference between the health department of the present day and that of the past is to be found in its personnel. No longer is any one good enough to go on the board of health; on the contrary its personnel must be made up of trained men who are capable of handling, in an intelligent manner, the administrative and other questions which present themselves for solution.

At the present time the health department comes in close contact with

the public, almost literally from the cradle to the grave, sometimes even before birth, in its prenatal clinics. The questions to be solved are of very great variety, and the power which it exercises is very great. Perhaps no other municipal department has such power; it can enter a man's house and remove his children to a hospital against his will; it can compel him to spend large sums of money in abating a nuisance or in making his building conform to its regulations; and it can, at times, destroy his property, sometimes without compensation. These great powers carry with them great responsibility, and care is required lest the board, led astray by fads or influenced by popular demand, should unwittingly do injustice.

In spite of its great power a board of health cannot accomplish its best work unless it has its public or at least a majority of it, back of its efforts and working with it instead of against it. To do this it must bend its energies to teaching the public so that it will understand and aid the board, and this education of the public is a function which has been exercised by boards of health from the earliest days to the present time. In the early days perhaps its power of education was less noticeable because the men of that time were to a great extent engaged in educating themselves and had little to pass on to the public. But as their own knowledge increased they gradually began to influence the public and teach it the fundamentals of hygiene as they knew them.

At the present time almost every health department is engaged in educating the public in some way; how it does it depends in great measure upon the size of the department and the amount of money available for the work. Even where no distinct bureau exists, education can be carried on. Letters upon health matters published

in the local papers, the distribution of leaflets to the children in the public schools, and short talks to local organizations are all methods which are effective.

A very fertile field for education is to be found in the children in the public schools. They are easily interested through the school nurses and take what they have learned home to their parents and help to interest them. In my own city we have been surprised at the intelligent interest taken by the children in the schools in public-health matters, and instances have been known in which the children themselves have influenced their parents to aid the Department in accomplishing its end.

The value of the educational work of a health department can hardly be overestimated, but it is a work which requires great care lest mistakes should be made. It is far better to say nothing than to say something that must be explained away later. In the attempt to "put something over," sound must not take the place of sense nor a well-rounded phrase, of fact.

The local board of health should be the leader in health education in its own community and should strive to be a board of health in literal fact. Its duties as laid down by the law have to do in great measure with disease and the prevention of disease, and the latter is fully as important as the former. It should teach the public under its care how to be healthy and how to keep so, and it can best do this by teaching them to turn to it for reliable information upon all matters relating to health.

At the present time the public is interested in public health and is anxious to learn all that it can in regard to it; public health may be said to be popular, as is shown by the number of unofficial agencies which are engaged

in such work. Unfortunately there is often a lack of hearty coöperation between these agencies and the local health department—a state of affairs which tends to handicap the work of both and to confuse the public.

The health department is responsible for the health of the community which it serves and should direct all health work. To do this it must get in close relation with the various unofficial organizations interested in the same work and make use of their assistance. It often happens that these can accomplish something which the health department, bound by the law, cannot, and by availing itself of their aid, a result which otherwise would be unattainable can be secured.

Finally, the health department must get in close touch with its community. Too often the public looks upon its health department as a mysterious body which, when sickness makes its appearance in a family, descends upon the unfortunates and makes them do things, the reason for which they do not understand. If the public can once be made to understand that this is not true, but that its board of health is a body to which it can turn for aid and advice at any time and which has an interest in its welfare, we may feel sure that the people will respond in a most surprising manner and will be willing to accept the leadership of the health department and aid it to accomplish its desires.



PUBLIC HEALTH ACTIVITIES AND THE MEDICAL PROFESSION

GEO. C. RUHLAND, M.D.

Commissioner of Health, Milwaukee

Read before the Public Administration Section of the American Public Health Association, at the Fiftieth Annual Meeting, New York City, November 14, 1921.

THERE can be no denying the fact that the present unrest and irritability of an upset political, social, and industrial world has also reached the medical profession.

This should be of more than passing interest to the worker in public health, because, in part at least, this irritability of the medical profession expresses itself in rather sharp criticism and definite antagonism to certain, and let it be at once added, rather important and fundamental activities of public-health agencies. It seems important, therefore, that these charges be examined more closely, so that it can be better determined what action, if

any, need be taken concerning them.

First, however, it is pertinent to determine how authoritative the charges are, and to what extent they may be looked upon as representing the medical profession.

It is true, that so far as numbers are concerned, the complaint of the profession against public-health agencies does not appear very strong. However, it may be well to consider that the charges come, nevertheless, from sources that, in several instances at least, represent regularly organized medical societies; that the protest does not appear as a reaction to a purely local grievance; and that it deals with

a question that touches deeply the economic and, therefore, vital interests of the profession.

In view of this latter fact, especially, it can hardly be said that the irritability among medical men is merely a post-war manifestation, and that it will disappear as conditions in general mend and return to normalcy. On the contrary, it is unfortunately very likely that the problem will grow and become even more acute and complex as time goes on. With this consideration in mind, let us now deal more specifically with the apparent difficulties, and determine, if possible, our position and responsibility concerning them.

The chief complaint brought by the medical profession deals with the so-called medical activities of public-health agencies. The medical profession, at least those who have so far expressed themselves on the matter, holds that medical activities should have no part in public-health work, or, as it is put in a resolution by one of the several medical societies which are on record on this matter, public-health departments should not enter upon "campaigns of treatment of any disease or condition." To do so is considered "inimical to the best interests of the public and the profession."

It is further argued, in explanation of how these best interests of the public and the profession would come to grief, that the quality of public medical service would be bound to be inferior, because of the generally lower compensation paid to workers in the public service. It is also claimed that the man of brilliancy and ambition no longer would engage in medicine for a livelihood when he would have the state for his competitor, and that as a consequence all efficiency and progress in the art of healing would deteriorate, and the public would necessarily become the loser thereby.

There can be no question that in the arguments advanced here lies much food for thought. It is, however, not the intention here to discuss all of these arguments in detail nor to urge or defend so complete a program of state medicine as apparently exists in the minds of those from whose resolutions of protest we have just quoted.

All that will be attempted is to discuss and defend the right of public-health agencies to engage in what are called "medical activities."

It is undoubtedly in the main correct to say that all activities of public agencies have for their existence and justification, public opinion or law. While law is public opinion crystallized, it should not be forgotten that very naturally public opinion precedes law, and that therefore practices may be in existence and approved even before they find formal recognition in statutory form. Absence of a specific law, therefore, cannot be looked upon as necessarily meaning lack of approval of and justification for action or method. All law has—or at least should have, and in the future undoubtedly will have—for its fundamental basis the consideration of the rights of the many over the individual.

Out of this principle developed, so far as public health is concerned, the practice of quarantine, or the isolation of an individual who because of disease is considered dangerous to the interests and well-being of the many.

A better understanding of the nature and mode of transmission of contagious diseases, naturally brought with it changes in the defense measures by which society chose to protect itself. Frequently treatment of the diseased person is found to be the most effective means of dealing with the problem of a communicable disease. The choice of treatment, as applied to contagious disease, does not, therefore,

mean a surrender of the principle and purpose of quarantine. It is merely a change of method, by means of which the final effect—that of protecting the public—is to be attained.

It has been with this understanding that the campaigns against tuberculosis, against hookworm, against malaria, against diphtheria, against smallpox, and more recently the campaign against the venereal diseases, in all of which the treatment of the individual is recognized as an important and determining factor in the prevention of these diseases, have been developed and have been carried forward. It is safe to say that there are very few, either in or out of the medical profession, who will maintain that the activities of the public-health agencies have not been amply justified and worth while in these campaigns.

The inclusion of treatment in dealing with contagious diseases as part of the legitimate and approved activities of public-health agencies, should not be difficult, therefore, to understand. There have, however, been developed within recent years, other medical activities by public-health agencies, in which the justification for action may seem less apparent, since cause and effect are in less immediate and striking relationship to one another as in the case of the contagious diseases.

These activities include child welfare, maternity hygiene, nutrition work, dental and psychiatric clinics, together with all the activities that are usually included under the term "school medical inspection." The justification for the inclusion of these activities by public agencies in health work is based on the conviction that human life has an economic value to the state, and that the state, therefore, must be interested in the protection of that life.

The thought really is not so extreme as it may appear at first reading. On

the theory that an educated citizen makes a better citizen, the state requires compulsory attendance in schools maintained and operated at public expense. It should not be difficult to understand then a policy under which the health of the body and the soundness of the mind of the child that is sent to school becomes also a matter of concern to the state. If the state has made an investment in the education of the child, it seems only good business that the state should take care that it will realize on this investment by preserving and developing the life of this child, so that it may grow to maturity, and by its labors in turn contribute to the commonwealth, to which it owes its education.

On the same theory of the economic value of the human life, it seems good reason to see to it that a child be born in the best possible condition of health. This means maternity and infant-welfare clinics, where mothers can be instructed in the hygiene of motherhood, and where mothers can be told how to keep their babies from becoming sick. On the same grounds the public dispensary system is justified, not as an institution of charity, but as a legitimate agency of defense of the public against economic loss through sickness of the wage-earner.

It would carry us too far afield if we should elaborate here on the monetary loss that is occasioned for the community through sickness of its wage-earners. Particularly where such sickness is of long duration, and the sick person becomes a charge upon the public, do these monetary losses become very important.

Obviously it is to the greatest interests of the community and the state if the health of its citizens is kept at the best possible working efficiency. If this can be secured by timely advice on matters of personal hygiene, or even

by treatment at public dispensaries, it certainly seems justified both on the grounds of good business and common sense.

So far, then, as the question of the right to include treatment in the activities of public-health agencies is concerned, this seems amply justified, both on the basis of reasonableness, as well as by public opinion, which has approved of these public activities.

It should be understood, of course, that in all these activities, at least at present, service is rendered only to the poor and the needy. So long as this service confines itself to the poor and the needy, there can be no legitimate grounds on which the medical profession may base charges of having its personal rights and interests invaded. It is true that the term "indigent" is one that gives rise occasionally to dispute. It is not always easy to say just when a case is indigent and deserving free medical attention and when not. In the main, however, it is undoubtedly true that the cases are few where people able to pay receive treatment at free dispensaries. In the few instances where they are seeking service at free dispensaries, it is questionable whether these would be profitable cases for the private practitioner.

It is, nevertheless, unquestionably true that the medical profession finds its particular field of activities more and more encroached upon. This, however, is not entirely due to the activities of public-health agencies.

With the rather tolerant attitude of the American public there has developed in this country a large number of groups outside of the medical profession, who all claim to be practicing the healing art, such as, Christian Science practitioners, chiropractors, and other variants of these types. There is no doubt that all these cults, whether there is merit in their particular method or not, nevertheless, find a fol-

lowing, which in turn means loss of business to the regular practitioner in medicine. The remedy for this situation, however, does not lie in an attack upon public-health agencies, but rather in uniform requirements of educational standards for those who wish to practice the healing art.

Finally, although it is not primarily the purpose of this paper, it may not be amiss, nevertheless, to add a few suggestions for the medical profession that may serve to clarify present misunderstandings, and to that extent assist in maintaining the cordial relationship of coöperation that should exist between public-health agencies and the profession, which is so necessary for the best interests of all concerned.

Obviously, a better understanding of what public-health work is and must do, will greatly help the profession. That means, first and foremost, an understanding of the term "disease prevention." This should be the responsibility of the medical schools. The public is beginning to understand and appreciate the importance of preventive medicine and disease prevention, and public opinion will, therefore, hasten their development.

The private physician will do well to fall in line with this new and growing thought. At the present the practice of medicine is essentially built up on the practice of treating disease once it has developed. The physician of the future unquestionably must prepare himself to prevent the development of disease rather than to deal with it only after it has developed. This will mean a great deal more study and work in eugenics, in physiology, in hygiene, and in dietetics before the practitioner can become the competent adviser of the public on how to keep well. There can be little doubt that in this direction lies the future development of medicine. The public will be ready

to accept service on that basis as soon as the profession is able to meet the demand.

Nor will this mean a practice in unwarranted competition with public-health agencies, if these agencies confine their service, as at present, to the needy and the indigent. Even in preventive medicine, as applied to the in-

dividual, the best results undoubtedly will be obtained where the personal history and the family history can be closely studied. This intimate detail work, therefore, will probably always remain the unchallenged province of private practice, which must supplement the mass effect sought by public agencies.



REPORT OF COMMITTEE ON NARCOTIC DRUG ADDICTION

Presented before the Joint Meeting of the Public Health Administration, Food and Drugs, and Laboratory Sections, Fiftieth Annual Meeting, American Public Health Association, New York City, November 17, 1921, and adopted by a majority vote of those present.

YOUR Committee has given careful consideration to the present-day opinions, as represented by American and European publications, on the question of drug addiction.

The original Harrison Law, with its later modifications and its various interpretations, has been critically examined.

The differing ideas as to the classification of addicts, their total and relative frequency, the dangers to the community arising from their existence, and the present and proposed methods of treatment have been investigated.

Consultations with administrators and physicians of all colors of opinion have added to its information, and have assisted in crystallizing its ideas.

As a result of this study your Committee begs to report as follows:

The group of addicts variously spoken of as criminals, degenerates and feeble-minded is unwilling and unable to cooperate in the necessary treatment, and should be kept under official control. In the opinion of your Committee, the control of this group is essentially a police problem.

The group of addicts who suffer from physical conditions necessitating an indefinite continuance of their use of the drug constitutes a medical problem.

Furthermore, the group of addicts in

whom the clinical condition, which was the reason for beginning the use of the drug, no longer exists, or who began the addiction for other than clinical reasons, is also a medical problem. *These three groups, which include all addicts, do not constitute a public-health problem in the ordinary sense of the word.*

Your Committee feels, however, that in so far as *prevention* of new drug addiction may be considered as a public-health problem, there are two points it would urge:

First, that international measures leading to the reduction of the uncontrolled supply of drugs be taken.

Second, that the importance of the education of the physician as to the dangers of inducing addiction through medical practice, and as to the best methods of avoiding such dangers, be emphasized.

In view, however, of the present unsatisfactory state of this medical problem, and of the very diverse opinions existing as to its bearing upon legislation and police regulations, your Committee believes it to be to the public interest that a research Committee of clinicians, biochemists, and psychiatrists should be appointed with official sanction, to investigate all phases of the question and thereafter to make an authoritative pro-

nouncement on the medical problems involved.

Your Committee further recommends that the Executive Board of the American Public Health Association be authorized to coöperate to this end with other official bodies, should it be invited to do so.

ROGER G. PERKINS, M. D.,
Chairman

GEORGE W. MCCOY, M. D.
PETER H. BRYCE, M. D.

DISCUSSION

DR. HAVEN EMERSON: Mr. Chairman, and members of the Section: May I have the privilege of proposing that the report be accepted and its conclusion acted upon? In supporting that motion I wish to say that this is substantially the conclusion that has been arrived at by the Council on Health of the American Medical Association. In the nature of events, the Council of the American Medical Association has looked at it from a somewhat different point of view. There may be differences of opinion as to the productiveness of a research on this problem, but one never knows what will turn up from a technical research, and there is always benefit to be had from an impartial survey of any question on which there are differences of medical opinion.

I would be inclined to go further with regard to the recommendations that have been submitted. The report mentioned international control, recognizing that that is of course the first step, and the absolutely fundamental step. I do not think that in any way prevents nations or states from taking an active part in the control, as the report suggests international bodies should.

Further than that, it seems to me that it would be of advantage perhaps, coming from a medical professional body exclusively, that we should indicate that a large part of the local control should bear upon the control of physicians through the issuance of licenses to practice, and that there is a substantial responsibility of the licensing board of our state, and those who maintain the standards of medical practice, to see that their power is exercised to properly control the use of the drug, and to prevent use of it by physicians who abuse their professional privilege. Men of that sort should be stopped at once, and it is the duty of the local committees and the board of health to see that they should be stopped.

I would call attention to the fact that we believe that the existing national laws are unnecessarily hampering to the practice of medicine, and certain improvements in those laws should be made, and I see no impropriety in the American Public Health Association joining with the American Medical Association in endorsing a law that the use of codein should

not be subjected to the limitations that are now in force.

And I suggest that we should jointly request the release of apomorphin from the restriction that is now placed upon it.

In these ways, I think we can go back to a more reasonable administrative control. Furthermore, I think there is a serious injustice in making the practice of medicine bear the burden of a revenue law which did not contemplate imposing on physicians the burden of adding income to the government in the course of carrying out their profession.

JUDGE CORNELIUS F. COLLINS: My impression is that the difficulties with regard to the regulation of the drug situation are due to the governmental or sociological side of it. I think we are in a sad state of affairs, where doctors have been intimidated and terrorized, where they have not been permitted to engage in their practice in accordance with the dictates of their best judgment.

I feel also that some doctors have been too timid and have failed to perform their duty in the way that the laymen understand their oath requires them to perform it. A sick man is entitled to treatment. A person who is suffering is entitled to treatment.

We understood the Harrison Law to mean that a doctor could, in the legitimate practice of his profession, treat in accordance with the dictates of his judgment, the only requirement being that of good faith. The law of the state of New York preceded the Harrison Law, and we acted on that theory.

I have some figures which I want to call to your attention, that will bear out the argument which I am about to make. In 1913, the Cocaine Law went into effect, and when that went into effect it opened up a sore in judicial life. The prosecutors of our different counties did not know the extent to which the drug evil had expanded, and with the enforcement of the Cocaine Law, the police gathered up a large amount of sufferers from heroin. They were brought into the courts; we had no law with which to punish them.

In 1914 we passed the law. The law as it read in 1914 gave the impression to some of the medical men that they were forbidden to prescribe drugs for the treatment of this habit. That impression was wrong. It was assumed that the doctor had the right to treat.

In 1914 we had 1,415 cases in Special Sessions. In 1915 we had 1,503 cases, and in 1916 we had 1,686 cases. This was 10 per cent of the whole business of the court. The courts were cluttered with a large number of drug addicts, coming in from what might be termed the underworld type.

In 1917 there was a fall, because in the meantime a statute had been passed regulating the right of the practice of doctors and calling specifically to their attention the fact that they had the right to treat drug addicts; and the statute was further amended in the next year giving a more detailed direction to the medical profession as to the manner of procedure. This excited some opposition because of the regula-

tion which required the making out of a triplicate prescription blank.

In our courts, due to that statute, we had an investigation made, with the result that the bill was adopted. It was the consensus of opinion of the joint committee of lawyers, doctors, and judges, that the report of Senator Whitney should be adopted. After this bill was passed, the cases dropped to 540.

In 1918 a new law was passed which went into effect in 1919, and notwithstanding the fact that the law made regulations, right on top of that came regulations that were made by the power appointed under the statute. In other words, the federal government makes regulations through the Commissioner of Internal Revenue, and in our state we have a Commissioner of Narcotic Control.

What I am about to state is not a criticism. When the law went into effect, the Department of Health persuaded the authorities that the best thing to do was to have a registration of the individuals who were subject to narcotic influences, and the putting into operation of this registration caused the people to collect in New York and to wait in line to be registered, so as to get their daily quota. It was properly decided that there would not be given a continuance of the doses, and that there would be a reduction, but this reduction was made arbitrarily from day to day. In other words, rules were taking the place of medical science.

That is what happened, with the result that there was immediately an increase in the number coming into our courts, because the people started to get drugs illicitly. It follows that where you prevent the medical profession from exercising its true function, the peddler will get busy, and the person desiring to obtain the drug unlawfully will get it, no matter what he has to do, and he will thus be classed as part of the underworld when he is nothing of the sort.

You men know that a number of these drug addicts cannot be classified as degenerates. A number of them are the victims of ignorance of the qualities of the drugs that are being administered. Many years ago heroin was given for headaches, and people could buy it in drug stores without interruption. On top of that, the number of men who were drug addicts in the underworld increased. The opportunities of obtaining drugs illicitly increased. The addicts of what we might call the upper world got the drug anyhow. They went outside of the city to get it, and in the next year they brought something entirely new on us, a bill which was intended to prevent a doctor from prescribing drugs for the treatment of drug addiction.

This was intended to prevent a doctor from treating. In other words, it was the purpose of the law to enforce and make mandatory, treatment in hospitals. That would mean what? In the city of New York we have 40,000 drug addicts. Have we got hospitals to put them in? No. The Smith Bill would have contemplated that. And they said something about

contagious or infectious diseases, and gave the power to treat addicts as if they were infectious diseases.

They repealed that law, and left us in the state of New York without a law to stand on. The result is that we had to proceed without a law. The doctors were intimidated. There were two men in the District Attorney's office that told the doctors that the only way that the law could be interpreted was that they could not exercise their profession at all, unless it was inside of a sanitarium or a hospital, which is absolute nonsense. And one man of the Board of Health has fostered this, and some one outside has fostered it, and I believe he is a fanatic. The law was repealed. We got a Sanitary Code amendment.

Because I have been eight years working on this situation at the head of a committee, I have naturally imbibed some pretty strong convictions, and I do not want to give the impression that I am not open to reason. But I think that my views on the subject have been substantiated by events.

Between a certain date in May and a certain date in July of this year we did not have any law at all. The Harrison Law operated in this state as well as others, but they could not seize for possession. You men in New York City know what the slums are. But you men outside have no idea what a harvest the peddler reaped in that time, and what schemes they resorted to in the way of smuggling in the goods and the prices that they exacted.

On the 25th of July we managed to get a local statute or health ordinance adopted. The cases increased from fourteen in June to ninety-four in July and three hundred and sixty-four in August, and then dropped to two hundred and one in September, and a hundred and ninety-one in October.

So that the facts are these: Under this new ordinance the physicians had the right to practice and to treat drug addiction, provided they adhered to the Harrison Law. In the law which the committee proposed, we told what the doctors might do, and said that they could practice and the kind of prescription blanks they would have to use, but that was cut out. And then came the false and erroneous interpretation, telling the doctors that they could not do what the Harrison Law told them that they could do, and that they had to accept the interpretation of two men in the District Attorney's office. These men said that you cannot treat if you have an ambulatory practice; that is, that you cannot give ambulatory treatment. That is wrong.

I have been told that in the amendment of the federal regulation they give thirty days. Medicine has ceased to be an abstract science. A man who is an internal revenue officer can fix by statute how long it should take. After all, what are these regulations for but to cure the social evil? I have read the report of some associations with which I had been associated, men engaged in the crusade against the drug evil, and I was astounded that they took the side that they did, and my impression is that

just such a resolution as that which was read to-day will reach somewhere.

This resolution will bring the medical men and the sociologists together, and those who have to make the law also, so that we can get something great, so that men will not be terrorized, so that we can get the Attorney General to tell us what he means by regulations. If you do not, there is an evil besetting our community. The purpose of this law is not to harass the drug addict, the purpose of this law is not to treat him as a criminal. It is to treat the improper use of narcotics. We have fallen into the error of regarding an addict as a criminal. Some of them can be on the other side, fighting for us.

I want to say this: I believe that custodial care is the best. I believe you have reached a period where you have got to have custodial care. But in the test of two months of hospitalization of the treatment of this habit, they lose sight of this, that over 90 per cent of those who have been treated in the hospitals have after release had a relapse, and that there has been just as much success in the treatment of this habit by the general practitioner as there has been in the hospitals.

DR. ROYAL S. COPELAND: I have been very much interested in the comments of Judge Collins. I am not clear yet whether he condemns the Health Department of the city of New York, or whether he commends it. He apparently commends the Health Department for enacting some amendments to the Sanitary Code which would make it possible to deal with this problem, and he apparently condemns us for having had a system of registration.

Even judges have short memories. My early instruction in this subject came from this speaker. I remember he was one of those who proposed the registration. Probably these things have no bearing on the problem.

We have a great problem which to my mind is a public-health problem. Judge Collins says there are 40,000 addicts in the city. I do not know how many there are. When we had this system of registration, about 10,000 registered. We have taken 3,000 through our hospitals at Riverside. The Judge said 90 per cent of these have lapsed. I do not suppose the percentage is important, but it is very much less than that. I think that 50 per cent would probably be more nearly correct.

We are only picking leaves. We discussed what to do with this problem, when it is to my mind as simple as anything in the world. The reason why we have a narcotic problem is because we have narcotics. Two years ago we imported into this country 546,000 pounds of opium. I thought because of all the agitation here, and the tricks of the sight-seeing people, and the creation of sentiment, that we would get a marked decrease in the amount of narcotics brought in, but as a matter of fact we brought 640,000 pounds, that is, fifty grains for every man, woman and child in the United States, and there is no other civilized country on the face of the earth where the importation

of opium exceeds three grains per capita. In other words, we are bringing in sixteen times as much opium per capita as any other country.

Don't you see the problem? Why do they lapse? There is nothing that makes me so disgusted as to have somebody get up and say there is something mysterious about this problem. You can take any patient off the drug in ten days without suffering. Why do they relapse? Because this patient does not have any moral regeneration, and when he comes back into the society of his family, the first time he has any physical disorder or suffering of any sort, or moral disorder, he goes back to the drug. Why does he go back to the drug? Because he can get the drug.

What will we do about it? To my mind the remedy that is proposed in the report to-day is all right, if you do not care when you settle it. You appoint a commission and God only knows when the commission will arrive at any conclusion. Haven't we thought about this long enough, so that we know what to do about it?

I would have this country, through its Public Health Service, determine arbitrarily the amount of opium which it should receive. We will suppose that it is 25,000 pounds, and that that is ample for our needs, instead of 640,000 pounds. I would have that manufactured under the auspices of the government, and then dispensed through legitimate channels, just as we do whiskey to-day. I think any legitimate physician should get any morphine he needs, and then I would say that this country should absolutely prohibit the exportation of opium and its derivatives.

What happens when this stuff is exported? It is shipped to Canada, where we lose track of it, and it is smuggled back into this country and sold on the streets of New York. One-half of all the addicts in this city are under twenty-five years of age, and one-third are under twenty years of age, and yet we are permitting this damnable business to go on when by a simple act of Congress this whole thing can be done away with.

Why do we spend our time talking about conditions when this great organization can say, "We demand the suppression of a traffic more dreadful in every respect than the liquor traffic?"

DR. JAMES F. ROONEY: I have been very much interested and very deeply moved by the orations which we have just heard. I feel that the time has come in this question when appeal should not be made to sentiment, when exaggeration should not be indulged in on either side, when the real, true aspect of this minor health problem should be considered upon an unemotional basis.

What have we actually, in regard to the problem of drug addiction? And here now I want to say that I most heartily wish to second the motion for the adoption of the report of this Committee, and to concur in Judge Collins' statement that it is the first real, honest, scientific attempt to investigate this prob-

lem that I have heard in any medical society in this country.

I have been associated more or less in a legislative way with this question for the last eight years. And there are two contending forces in this country, neither of which is right. Because neither of them are basing their statements upon real facts and statistics and study.

So far as I know, there has not been in this country an honest, clinical investigation of the drug addiction problem, whether it be a disease or a habit. There has been some investigation on the Continent. But none of the investigations in the United States have been at all conclusive, and especially is that true of the latter ones.

Before you can discuss this problem, you must know whether the addict is merely a person with a vicious habit, or whether as a result of taking into the body of doses of a drug, that that individual has developed pathological physiology. If that question is not determined, you do not know what the question means as a medical problem. The police problem is a separate and distinct problem, and must be dealt with in an entirely different manner.

This Committee's report asks that the questions be investigated, and I believe that we will waste no time, but that time will be gained if this investigation is carried on. I am not stirred, I am not moved by the talk of 10,000 or 40,000 addicts in the city of New York. I remember five years ago when the question was before the legislature that the statement was made that one-fifth of the population were addicted to narcotic drugs. As these questions are investigated, they dwindle until we come to the estimates that we hear this morning, which are probably more or less near the truth.

I want to, in proof, read you a recommendation that I made this spring in the discussion of this matter before the Medical Society of the State of New York. It was a discussion of this bill of which Judge Collins spoke, which prohibited the treatment by any physician of any persons who had narcotic addiction, outside of the hospital or institution. I stated that this bill is not a local one. The attempt is being made to have the regulation promulgated by a federal bureau, to give that act the same force as this bill had, if it became a law. Within the last two weeks that bill has been put into effect by the regulations of the Bureau of Internal Revenue.

I confess I agree with Judge Collins that without any question the treatment administered to the two classes of addicts must be essentially different, and roughly addicts can be divided into two classes, the criminal and the non-criminal classes. Without any question, the only way a criminal addict can be controlled is in institutions, and even after, it seems there are instances of relapses. The Commissioner of Health of the state of New York says that over 90 per cent of all the cases of drug addiction relapsed, and when Governor Miller asked Commissioner Biggs

whether he himself knew of a case of drug addiction being cured, he said: "I do not know."

If that is true, who is responsible? The medical profession is responsible. We have had the drug problem on our hands for a number of years. Have we attacked the problem as we should attack it, or are we going to consider this thing as the venereal-disease problem was considered up to five years ago, as a moral question and not as a medical one?

DR. ERNEST S. BISHOP: I repeat the endorsement of the report. I agree with the previous speaker that it is an absolutely scientific report. You do not know how you are going to handle a thing until you know what it is that you are going to handle. I agree with Judge Collins that we have an entirely different problem in the two different classes of addicts sociologically separated. I do not believe any man is in the position to-day to speak ex cathedra and ultimately as regards addiction and its ultimate characteristic. In my writings, as everybody knows, I have regarded addiction per se as a body condition. I have called it a disease. I believe it is a disease.

But I do not believe that in the case of the underworld, in the case of the man who is a menace, sociologically speaking, that this disease problem is the main thing, and I do not believe that in the man that is not of the underworld, that any other indication is the main thing. I do believe that eight years' experience has proved that. We have been through eight years of all kinds of experiments. We have tried every possible experiment in the last eight years. We have tried all kinds of determinations on the ground of narrow lines and have failed. We have tried on the broader lines and they have failed, and the trouble is that we have to strike in the middle of the rope. We have to treat the criminal as a criminal, and we have got to handle the peddler, and we have got to study the problem.

We have used words loosely. We have used the word "cure." We do not know what cure is. We have not arrived anywhere. Is an addict cured after you have taken him off his drug, and for how long is he cured, or is he not cured? You can ask that question of typhoid, and you have to answer your addiction idea as you have got to answer your typhoid question. He is cured when he is cured, and until you understand your condition, you do not know whether he is cured or not. You have no basis of judgment.

There are arguments on every point in this thing. There is not a point that you can bring up, over which you cannot scrap. And that has been the trouble all this time, that we have not been working, but we have been scrapping.

DR. M. P. RAVENEL: I was delighted to hear Dr. Emerson second this motion. It is opposed to the report made before the Council of Health and Public Instruction in the American Medical Association, of which committee Dr. Emerson was a member.

That committee of the American Medical

Association was appointed for a specific purpose, and as far as I have been able to study that report, it did not touch the purposes for which it was appointed, but instead of that went into an entirely different question.

As regards the first proposition, that this Association join with the American Medical Association in exempting codein, I trust we will not do it. I do not think the evidence on which Dr. Emerson makes that statement is sound. There is an abundance to the contrary, and I think we should do as the committee proposes, and that is to study it, and, for God's sake, do not let us join with the American Medical Association on this question.

DR. JACOB DINER: It is needless to say that a man who has had an experience of thirty years must have come in contact with the narcotic situation. It is also needless to add that the lucid remarks of Judge Collins, than whom there is probably no one who has given greater study to this subject, deserve a great deal of thanks on behalf of every man who is interested in his fellowman.

But we have been discussing whether drug addiction is a disease, or whether it is an evil, or whether it is an infectious disease or a moral disease. All of these things are important.

But the most important thing, it appears to me, is the answer to the question: Why is it that in spite of all the rules and regulations which have been made and interpreted, the consumption and the importation of narcotics, as illustrated by figures given by Dr. Copeland, has increased?

Why is it that we have more and more narcotics brought into this country, and bear in mind that we take into consideration the drugs which are imported legitimately and are recorded. We do not take into consideration the quadruple quantity which is smuggled into this country. Doesn't it strike you that the interference with the legitimate practice of medicine has created a demand, and that the law of demand and supply has come into play there? That where the honest addict, not the criminal addict, has found his family physician, because of fear of imprisonment, refusing to treat him, that he has only one choice, or perhaps two, either to become registered in the Board of Health, or go to the underworld, and as long as he has the money, he will go to the underworld, and while treatment is being refused to him, there will be a continual supply of the drug, especially when there are such high prices being paid for it.

It seems to me that the recommendation of this committee is the first sane and safe one that has been recommended before any body of professional men interested in this subject. It seems to me that what has been brought out proves that there should be an investigation, not by a closed organization, not by a small body of men whose preconceived ideas on this subject will prejudice them along certain lines. Let us have an investigation by an unbiased and fair-minded body of scientific men who

will first determine what is drug addiction, and then recommend steps which will enable them to handle this situation clearly and intelligently.

And above all, don't let us permit the restriction of practice of the legitimate practitioner. I think every man should be entitled to an opportunity to go to his own doctor.

DR. JOHN N. HURTY: It appears to me that we disregard, in our efforts to solve all of these problems, a fundamental principle. Neither by law, nor by education, nor by prayers, can you change the human character. You cannot instill noble and high ideals into men. The roots of them must be there.

There are some men possessed of passions that they can hardly control and do not control. They have no moral force to control them. We endeavor to stop stealing by law. We hold it down, but a thief is a thief, just the same, even if he has restrained himself from stealing.

I found thirty-seven bank cashiers in the Leavenworth Prison, and all of them were Sunday-school teachers, and had been teaching morals, and yet they were thieves. They had been teachers of morals, trying to instill them into children, and yet they themselves were thieves.

You cannot regulate this subject by law. We can restrain it and hold it down. "We blunder on through love and hunger, and always will." That remark struck me forcibly indeed. "We blunder on through love and hunger." Those are the controlling forces of this world.

The evolutionists tell us that one day two highly organized cells came together, seeking enjoyable sensations. And from that sprang all life. Two highly organized cells, where they came from they do not know, seeking pleasurable sensations, joined, and behold, life on this earth appeared.

I have been behind the drug counter in my early days, and I have studied these things from the point of view of the physician and the point of view of the sanitarian, and you may put this down, that a sanitary problem cannot be solved by caring for the victims of insanitation. You have got to get down to the cause, and that is the only way to solve it. You must find what is the cause of the trouble, and attack that, and in that way you can solve it. By merely attacking the result, as we have been doing for the past several years, you absolutely get nowhere but increase the trouble.

I agree with Dr. Copeland. Let us do away with the damnable stuff.

DR. LYMAN F. KEBLER: I do not know whether you want to prolong this discussion, but I think it is a particularly vital and interesting one in many ways.

When the law became operative and required declaration of the morphine on the label, we were surprised to find the extent to which it was used. First came the soothing syrups, most of them having morphine or some opium derivative. Then was brought to our attention the situation that so-called treatments or

cures for the opium habit had opium in them, or had the drug which they pretended to cure.

The Food and Drugs Act covers the idea that a product is a drug if it is intended for the cure of a disease. It was not very difficult to handle soothing syrups on that basis because many of them were used to a certain extent to treat certain abnormal conditions in children. We proceeded against those products and we have a thoroughly creditable piece of work to our credit.

Then came up the preparations which I have indicated, of which there were twenty alleged cures for drug addiction. We entered into correspondence with these people, and found exactly what they were doing. Dr. Wiley was in charge of the work. I told the proposition to him. He said: "Here is the situation. These people are pretending to cure drug addiction in all phases with the very drug that they are trying to cure right in the treatment itself. Drug addiction has not been considered by the medical profession as a disease. There is some doubt about it." He said: "I shall decide in favor of protecting the public," and he said, "Go to it, and clean them up," and we cleaned them up. They soon stopped sending those products into inter-state commerce. We were able to get at them through the law which prevents the misuse of the mails. However, it is sometimes very difficult to reach these products, because they are distributed all over the country.

Then we brought the matter to the various departments in the various states and told them what was in these things, and suggested to them the denial of the mails, and it was done. That cleaned up the business.

Now, regarding the pity for some of our medical men, I want to say that while the vast majority, in fact 99 per cent of the medical men, are practicing their profession honestly, the men that we have the most trouble with in our work are medical men. They are the ones that fought us regarding the enforcement of the law, and they carried the case to the Supreme Court, but they lost and that ended the business.

I am interested in Dr. Emerson's idea not to put the enforcement of this problem into the Treasury Department. I came fairly closely in contact with these officers and they have no desire to have that law. It is distasteful to them. It is an unpleasant thing, and if anybody knows where it can be handled better, where it can get better results than those obtained by the Treasury Department, put it there, because they will be only too glad to get rid of it.

DR. C. E. TERRY: I just wanted to state that about six months ago there was organized in this city a committee known as the Committee on Drug Addictions. The field of that Committee was somewhat along the lines suggested in the report by Dr. Perkins, namely, to make a broad, comprehensive study of all the facts and alleged facts relating to drug addiction and its medical, social, and other aspects.

The Committee is composed of Dr. Katharine B. Davis, who was formerly Commissioner of Correction of New York City; Dr. Thomas W. Salmon, Dr. William F. Snow, Dr. George W. McCoy, Mr. Willard S. Richardson, and Mr. Raymond B. Fosdick, and this committee is searching through medical and other literature, through questionnaires, through every possible source of information, for data on this subject, which will lead to a sane and rational consideration, and will be of help to the Committee and to the public.

The Committee desires that members of this Association who have material of interest in regard to this subject, kindly submit this material to the Association. It will be of the greatest help to us in solving this problem.

The foreign medical literature is gone into exhaustively, and a great many facts, not published in this country, and not known, are being uncovered and accumulated.

The non-partisan study of the situation is exactly what the Committee had in mind when it began this work, and I would thank the Association very much indeed if they would submit to the Committee any material that it might be able to use.

DR. JOHN P. DAVIN: I want to congratulate the American Public Health Association upon the report that has been submitted to it, and which has been so well seconded. I think it will make a monumental mark of the fiftieth anniversary of the foundation of this Association under the head of our beloved Dr. Stephen Smith.

You have placed the matter where it belongs. Three years ago, at the American Medical Association, I asked Dr. Guiteras of Cuba: "How do you solve the drug problem of Cuba?" He said, "We have a medical profession, and we have the police." In the United States we have a medical profession that is somewhat afraid; we have a pharmaceutical profession that is struggling to keep itself alive, and we have a police about which there are various opinions.

I want to protest strongly against putting this burden on Congress. Congress to-day is struggling with the momentous question of whether the physician should prescribe a bottle of ale or stout for his patient. It has also the question of maternity in consideration. A long time ago a certain man said, "Suffer the little children to come unto me." Congress asks to have the baby unborn brought into their care. Do not ask Congress. We have all kinds of associations and assemblages battling with this question. The last one, if I may state it, is the K. of C. and they are going into the question of solving the drug problem in institutions under the leadership of a distinguished attorney. The trouble has been that we have had too much district attorney. We have not gone to the trouble of investigating what has been done in Europe in regard to this problem, and consequently we have gotten nowhere. If we would do something of that sort and find out what Europe has been doing, it might be of great help.

The trouble is a purely American trouble,

and it is founded on a treatment. We began with a cure. If we never had had a cure for the drug habit, we would not have had this

trouble. The treatment is going on now from Atlantic to Pacific in every state of the United States, and nothing has been accomplished yet.



REPORT OF THE COMMITTEE ON DRUGS AND NOSTRUMS

Presented before the Food and Drugs Section of the American Public Health Association, at the Fiftieth Annual Meeting, New York City, November 18, 1921, and adopted by vote of the Section.

THE importance of drug administration as a health matter has been in the past largely unheeded and health laws pertinent to this subject have not been vigorously enforced. The explanation of this seeming indifference on the part of health agencies is difficult to find. Up-to-date health administrations provide visiting nurse, district physician, tuberculosis, venereal and child hygiene clinics, laboratory diagnoses and milk inspection, but at the same time make possible the defeat of their main object—the conservation of health—which is vitally attacked so long as the public countenances the advertising and sale of the nostrum.

The question may be naturally asked in what manner drug and nostrum advertising and sale affect the public health. In our opinion the answer may be made in a few words: the proprietary concern encourages self-diagnosis, inspires fear, and having accomplished these things, it encourages self-medication and places a responsibility of treatment whether necessary or not in the hands of the individual.

The medical profession is partly responsible for the nostrum evil, since it has never taken a stand against self-medication and ignores the drug department of the crossroad store. Here, the proprietor and clerk, who are often incompetent to distinguish between general merchandise of good or inferior quality, are regarded by the customers as qualified to prescribe the proper tonics, pills or treatments for an unlimited variety of ills, real or fancied.

As pertinent to the human welfare aspect, the economic feature of the nostrum evil should be emphasized. It is self-evident that the retailer, who in a large proportion of cases is a member of the pharmaceutical profession, should be protected; nevertheless, the manufacturer to whom the major profits accrue has no legitimate claim for such protection or perpetuation.

A vast sum of money is spent in worthless nostrums. As long ago as 1905 it was estimated that seventy-five millions was expended by the American public annually for nostrums. It is manifest that a still greater potential sum is squandered in idleness consequent to the interminable waiting for cures. Finally, many valuable lives are shortened because of ill advised dependence on nostrums instead of scientific treatment.

Every health administrator undoubtedly has had instances of fatal self-medication brought to his attention. Knowledge of the situation is frequently obtained first from appeals for the aid of physician or nurse. On arrival, these agents find it impossible to save the victim's life. Furthermore, they are confronted with the thought that adequate supervision might have saved the patient from death.

In any consideration of this subject, mention should be made of our present defective health educational program relative to the nostrum. No sane individual will deny that there is a demand on the part of the public for the nostrum. This demand has been created and kept alive by the proprietary manufac-

turer. The creation of this demand has been and will remain an educative effort on the part of nostrum promoters. In order to combat this policy, it will be necessary for health agencies to educate the public concerning the nostrum and its attendant evils.

The health menace in worthless and criminally adulterated and misbranded drugs and nostrums has been dimly appreciated for a number of years and has been partially met by legislation, both state and national in scope. Unfortunately, however, the effect of this legislation is not all that could be hoped for or expected of it.

The present federal food and drug act is adequate as to adulteration and misbranding, and the Department of Agriculture cannot be praised too highly for its excellent law enforcement work in the past few years. However, the federal government can control only inter-state commerce, and, furthermore, vital weaknesses still exist. There is no control over newspaper and magazine advertising, and federal law cannot regulate intra-state commerce. The present federal system of law enforcement consists in the forced correction of any adulteration or misbranding, and in our opinion, infringements of drug laws have been regarded as merely technical violations and violators have been only nominally fined. They have been permitted to withdraw inter-state shipments which have been seized, by consenting to relabel their goods and furnish a bond for the execution of the same.

By all odds the greatest defects in drug and nostrum law enforcement lie in intra-state inadequacy and the fundamental reasons for this inadequacy are:

1. A lack of proper appreciation of the problem as a health matter.
2. State appropriations for drug enforcement already undertaken have been entirely inadequate for coping with such a problem.
3. In any enforcement program un-

dertaken, drug and nostrum control has been entirely subsidiary to food and animal feed problems, and the vital human welfare aspect has been entirely unappreciated.

4. Even at its best, intra-state control has had inadequate laboratory and inspection facilities and it is a well-known fact that a half dozen inspectors cannot properly cover the wants of millions of people.

5. In any work which has already been undertaken, there has been absolutely no control over the magazine and newspaper. Consequently, advertising has been able to extol the virtues of preparations in a way which the labels could not. At the same time there has been no penalty attached to such fraudulent advertising, since any advertising laws which have been in existence have not been enforced.

Since this committee has enumerated many weaknesses and criticised our present system, it should be in a position to offer constructive criticism and at the same time suggest a remedy for the faults which it has exposed. Several suggestions are here proposed:

1. Uniform laws and their proper administration.
2. Adequate advertising laws and restrictions.
3. Adequate pharmacy laws and a license system.

The first suggestion pertains to labeling and adulteration legislation and several phases of such legislation should be taken into consideration.

1. State food and drug laws. In quality and effectiveness of state food and drug laws, three standards may be established—good, bad and indifferent. In other words there is absolutely no uniformity in the various state codes. Therefore, it is imperative that an effort be made to make state laws more nearly uniform and at least equal in stringency to the federal law. At the present time, if

our understanding is correct, there is no provision in many states for the seizure, under due process of law, of adulterated or misbranded preparations. It is certain that any law on this subject must have a seizure clause in it, if it is to be effective.

2. Enforcement of state laws. The enforcement of these state laws should be placed in the hands of local and state health departments, since it is obvious that this is purely a public-health problem.

3. Technically trained enforcement officials with broad health views are essential, since this is a health problem and not one of agriculture. Our grievances with the present state system have already been touched upon, and since in most instances Departments of Agriculture enforce these laws and since their interests are mainly agricultural, their activities concentrate upon foods and animal feed matter to the consequent neglect of drugs and nostrums.

The second suggestion pertains to adequate advertising laws. At the present time there are advertising laws on the statute books in most states. However, in most instances such laws are merely technical and no attempt is made in their enforcement except by the various advertising clubs whose efforts are directed only toward the field of fair advertising, and whose viewpoint consequently is not the health one. It is, therefore, suggested that there should be adequate advertising laws with sections devoted to misbranding matters, and the enforcement of such sections should be in the hands of health agencies.

Until model advertising enforcement laws pertaining to these matters are passed, it is necessary to have legislation amending the food and drug laws in such a way that newspaper or magazine misrepresentation may be considered in court as label misbranding. At the present time enforcement agencies have no control over advertising misbranding except as may be carried on by coöperation

between the newspaper interests and enforcement agencies, which coöperative effort can hardly be considered as control.

To be effective, such advertising legislation should be comprehensive enough to enable exclusion from the mails of any publications bearing advertisements of products which have been already indicted in any court. The constitutionality of such a measure might be questioned. Nevertheless, efforts towards such legislation should be made, since in our experiences in the past, indictments under food and drug laws have not necessarily meant vigorous prosecution, and trials have often been indefinitely postponed while the activity against which indictment was made proceeded unmolested.

It is the desire of this committee to emphasize the fact, that health and medical agencies in the past have been rather negligent of their opportunities in the control of medical advertising. No earnest or concerted effort at coöperation with advertising interests has been made in the attempt to exclude fraudulent proprietary advertisements from high class publications. It may be mentioned that the Scripps-McRae League has already established a censorship over various forms of medical advertising, and this apparently has been done voluntarily in the interests of good business. Much more could have been accomplished even without the aid of laws had our agencies realized their opportunities in the field of intelligent coöperation and constructive criticism.

The third suggestion pertains to pharmacy laws and licensure and emphasizes the importance of local pharmacy law administration and a licensing system. At the present time, pharmacy law enforcement is charged to the various state pharmacy license boards and to say the best for such a system, this is a very inadequate arrangement. These licensing boards conduct examinations and license

candidates according to their fitness to dispense and compound drugs.

Pharmacy boards provide that pharmacists may sell poisons to individuals only under certain restrictions. However, any itinerant vendor or grocer may sell any number of poisons, either in the form of standard chemicals or in the form of the proprietary, and sell the same with impunity; and if any accident occurs from this lack of control, local health agencies have no power of action against such vendor. Therefore, it is suggested that local pharmacy laws should be enforced by local health departments and in such an enforcement, it is self-evident in order for such agencies to exercise control, that a license system with power of revocation is imperative. Consequently, any licenses granted to dealers or manufacturers should be given only after strict inspection of the applicant's character and his mental fitness for such an occupation.

Such a measure would tend first to place the sale of drugs in the hands of men competent to handle the same, namely, the legitimate pharmacist or other qualified person. In addition to the above licensing of local pharmacies and drug handling establishments, it is advisable that any and all drugs or nostrums should be registered by the manufacturer before its sale or manufacture. The granting of such license should be predicated upon submission of label, proposed advertising and formulae. Any license so granted by a body or commission responsible to public-health authorities in the state in which such manufacture takes place should be based upon laboratory examination and specificity. If such a procedure be instituted, the issuance of licenses to retailers handling these registered products would thus be obviated. The potent argument for such a registration and license is that by this means alone may enforcement officials pass scientific judgment upon the relative merits of therapeutic agents.

It might be mentioned that at the pres-

ent time drug registration is carried on in only two localities. At the present time all new proprietaries going on to the Cleveland market are passed upon by the city chemist, and at the same time it is required that formulae be submitted. This requirement is not based upon any regulation or law but is carried out because the local druggists association in coöperation with the division of health have agreed not to stock any preparation that is not submitted to the division. The City of New York also has a registration system for proprietaries on their local market.

In conclusion the committee wishes to emphasize that there should be greater coöperation between federal, state and local health associations, since it is only by coöperative effort that we may be able to wage an effective fight against this evil.

Therefore, in view of the existing state of affairs and realizing the importance of this problem, this committee advances the following resolution:

Whereas, no proper agency is charged with intra-state and local enforcement of laws or regulations pertaining to the advertisement of drugs and nostrums; and

Whereas, the present methods of law enforcement give no adequate means for control of nostrums; and

Whereas, the placing of the enforcement of such laws controlling the advertising and sale of these substances in the hands of state and local health authorities would effectually check this growing evil; and

Whereas, local and state licensing systems with revocation powers for all manufacturers and dealers in drugs, medicines and nostrums requiring rigid inspection before granting of licenses would place the necessary power in the hands of health authorities; and

Whereas, experience has demonstrated that all nostrums should be registered with state and local health authorities with formulae submitted or printed on the package if scientific judgment is to be passed upon their safety; and

Whereas, no systematic study of nostrums has been made compiling data as to

1. Inter-state laws affecting them.
2. Intra-state laws affecting them.
3. Local ordinances and regulations affecting them.
4. Funds invested in manufacturing and advertising them.

5. Organizations promoting their sale, advertising and distribution.

6. Agencies through which they are retailed or distributed to the public.

BE IT RESOLVED, that the drug and nostrum committee study this subject and compile data in regard to nostrums; and

BE IT FURTHER RESOLVED, that this committee submit a model state law and a model ordi-

nance for local enactment placing the enforcement of advertising and sale laws of nostrums in state and local health authorities' hands.

HAROLD J. KNAPP, *Chairman*

C. A. ABELE

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METHODS OF COOPERATION AMONG MUNICIPAL, STATE AND FEDERAL OFFICIALS ON PHARMACEUTICAL PREPARATIONS

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Read before the Food and Drugs Section. Fiftieth Annual Meeting, American Public Health Association, New York City, November 18, 1921. Approved for publication by the Secretary of Agriculture.

THERE is to my mind no more fertile field for intensive work in the interest of health than the enactment and enforcement of state and municipal laws intended to control the purity of drug products. Many states have passed laws similar to the Federal Food and Drugs Act, and some cities have ordinances and organizations controlling the quality and purity of drugs. Many of these measures have been beneficial. However, some states and cities have no laws and many of the state and municipal governments having authority are not able to enforce their drug laws in as efficient a manner as they undoubtedly desire. The chief cause is, perhaps, a lack of knowledge of this class of products and the lack of properly trained chemists to determine the quality and strength of drug preparations. As strange as it may seem, many men trained in the enforcement of food laws and in the analysis of food products seem to think it is beyond their ability to understand the assumed mysteries of drug composition. Herein is found one of the main reasons, in my judgment, why existing state and city drug laws are not more intensively enforced. Many state analysts have not felt themselves qualified to examine drug

preparations and their executive officers have shared this viewpoint. It may be assumed that executive officers entrusted with the enforcement of state and municipal drug laws have thought it essential to have specially trained analysts for drug work, and because of lack of funds and scarcity of pharmaceutical chemists, they have in many cases made inadequate use of the drug laws on the statute books. While very desirable, it is not necessary to have specially trained men for this work. In so far as the analysis of straight pharmaceuticals is concerned, any food analyst can soon become proficient in the methods of analysis as given in the United States Pharmacopoeia and National Formulary. The methods and standards as set forth in these authoritative works are easy of accomplishment and interpretation.

Every proprietary and patent medicine, however, presents an individual problem, but not an insurmountable difficulty by any means. There are no standards or methods of examination for this class of preparations. In view of these facts, the analyst whose experience has been entirely or largely with food products will require training for a short period in the essentials of work on such articles. The

Bureau of Chemistry of the United States Department of Agriculture will coöperate with all state and municipal authorities in lending assistance in such analysis. The Bureau has laboratories in fourteen different cities of the United States, some laboratory being accessible in any part of the country. It is therefore possible for state and municipal officials to obtain aid from the Bureau of Chemistry laboratory situated nearest to them. When inquiry is made concerning specific products, it is necessary that the Bureau be furnished with a copy of the label and all accompanying literature, together with any other facts at hand as to how the product is sold and used. It may then be possible for the Bureau to suggest what particular ingredients to look for and, if necessary, the methods of analysis to use when such methods are known, as well as the amount of sample necessary for analysis.

Another means by which the Bureau of Chemistry can coöperate with state and city drug officials is by the detailing of a state or city analyst to one of the government laboratories for a period of intensive training, and where it is possible to do so the latter procedure is highly desirable. It seems to me that the greatest coöperation the Bureau of Chemistry can give to states and municipalities in their drug work is this training of analysts.

The Bureau of Chemistry has done considerable work under what is called the Sherley Amendment to the Food and Drugs Act, which is the amendment which prohibits false and fraudulent claims on all labels of patent medicines. It is this type of product that I have been considering as more or less difficult of analysis and interpretation. It is to control this class of preparations that most states need better laws and assistance in more efficient enforcement.

The Sherley Amendment of the Federal Food and Drugs Act has been extensively applied to certain classes of patent medicines. The labels on most of

the venereal disease remedies and abortifacients—ordinarily called female pills—which enter into interstate commerce have been completely revised, with the elimination of practically all therapeutic claims. It is perhaps needless for me to remind you that female pills are almost always used in connection with immorality. However, there are still some of these goods on the market, and the federal government is not able to deal with them for the business is done intrastate. The venereal remedies and female pills are among the most vicious things on the market, but the Bureau of Chemistry will have considerable difficulty in completely cleaning them out unless the state and city authorities join with us energetically in a coöperative way to bring about the desired results. We must have your coöperation. And to my mind, the most effective law, not only for these two classes of preparations, but for all so-called patent medicines, is a law which will cover advertising. The federal government needs an advertising law too, but it would be just as effective and perhaps more effective if each state and city had such a law. I am talking now of a law covering all false and fraudulent claims in advertising medicinal preparations.* The label of itself may be unobjectionable, but the advertising gives to the wording on the label an entirely new and often quite a false meaning. Many of the venereal remedies are still advertised broadcast as a cure for gonorrhea, although the label may state only the name of the preparation and nothing more. This also holds good for many patent medicines which are advertised as cures for consumption, diphtheria and all the rest of the diseases known by man and some yet to be discovered.

I shall now refer briefly to pharmaceutical preparations which are used by physicians for administration to their patients—preparations which go to make

*There are 23 states having the "Printers' Ink" model statute and 13 other states with an amended statute which covers all false statements in advertising.

up their prescriptions or that they may give direct to the patient. This certainly is a very fertile field for state and city control. State and city control is essential also to supplement the federal law, for in some cases the federal authorities are unable to take action where a doubt exists because of the fact that we cannot secure evidence of interstate shipment, or because we find products removed from their original packages—circumstances which, however, do not prevent state or municipal action.

Physicians in every state, through the medical associations, should demand protection from the unscrupulous manufacturer and unscrupulous dispenser, and work for laws and enforcement of laws which will afford that protection. The great trouble is, however, that the physician is apt to rely on the brand or manufacturer's name that appears on the label. It is well known by some of us that there are preparations made by reputable manufacturers that are not what you might expect from the labels. Take a very simple thing like fluid extract of cascara. The Canadian Government has shown that there are practically no two extracts thus named which are alike, and this applies also to those made in the United States. Again, in the case of another example—paregoric—I know of my own personal knowledge, outside of any connection with the government, of a large firm that has in the past made paregoric from morphine sulphate colored with caramel. I do not believe the physician who prescribes paregoric is desirous of giving his patient colored morphine sulphate. Take pills and tablets: the physician certainly prescribes these with a definite idea in mind, and that is to get a certain result from a given amount of certain ingredients. Yet, unfortunately, it frequently happens that some ingredient is missing entirely or is very deficient, or perhaps two or three times the amount supposed to be present is found. This, of course, is a menace to health in the

case of such potent drugs as heroin, cocaine, morphine, etc.

Many manufacturers make a pretense of having analytical control of their products. Do not be misled by a fine chemical laboratory into believing that all products are as carefully analyzed as the fixtures might indicate. Find out the qualifications of the chemists employed, and then review the analytical cards of a number of different preparations and ascertain whether the laboratory is for the protection of the people or for the pocketbook of the manufacturer only. Very frequently you will find it for the protection of the pocketbook of the manufacturer and the dividends of the stockholders. There are many good and reliable coöperative physicians' supply houses, and pharmaceutical manufacturers, but regrettably some such houses have come into existence as a result of the activities of promoters conceived in a Wallingford's mind and born to line with gold the pockets of a Ponzi. It is unfortunate that some physicians buy stock in such pharmaceutical establishments or physicians' supply houses. It makes a physician a party to the scheme and he is inclined to buy the products of this profit-sharing concern to the exclusion of all others. Since price and profit are the two uppermost thoughts in the minds of these particular manufacturers, they are, of course, reluctant to hire chemists to control their raw ingredients or the finished products.

The matter of factory sanitation to include sterility of products should be covered by law and by enforcement. To my mind this is of great importance. Tomato products are considered unfit for food when they contain more than 100,000,000 bacteria per cubic centimeter, and milk when it contains a much smaller number, to mention only two products; yet I have seen drug preparations on the market containing ten times that many bacteria, which preparations were to be

administered to the sick, a class who have a well-recognized low resistance to bacteria of all kinds.

And let me emphasize again that more effective control of drug products by the state and city governments is urgently needed. The city and state should take up this question more actively than has been done in the past; they should pass laws that will cover patent medicines and crude drugs as well as pharmaceuticals.

In conclusion, therefore, it is desirable for state and municipal drug officials to enlarge their field of activity and not

limit their efforts to a consideration of comparatively simple products, such as tincture of iodine and spirits of camphor, but to join with us, who are operating under the federal law, in our efforts to ever widen the circle of effective drug control. The Bureau of Chemistry regards it not only as a duty but as a pleasure to lend assistance by suggesting specific lines of work to be undertaken or by giving intensive training in so far as our funds will permit to such investigators as may be assigned to this most important regulatory undertaking.



SANITATION OF BATH-HOUSES AT PUBLIC BATHING BEACHES

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Read before the Sanitary Engineering Section, American Public Health Association, at the Fiftieth Annual Meeting, New York City, November 17, 1921.

AT most of the popular beach resorts there are establishments where bathing-suits, towels, etc., together with dressing-room privileges may be obtained by payment of a prescribed fee. In a relatively few instances these bath-houses are operated by the state or municipality, the fees being fixed at such amounts as will provide reasonably good maintenance and supervision. In the majority of cases, however, these establishments are operated by private individuals or beach associations whose chief aim is financial gain. Usually there is no supervision over the kind of service furnished by such places except such supervision as is given by local police departments in the interests of public morality.

For some years a certain supervision over public swimming pools has been maintained by the Rhode Island State Board of Health by means of more or less regular inspections and analyses of

swimming pool waters. In 1919 the scope of this work was enlarged to include inspection of wading pools, and a preliminary investigation was started to determine the sanitary conditions at the various public bathing beaches. The results of this preliminary investigation indicated that there was certainly room for improvement in bathing-beach sanitation and that conditions prevailing at certain public bath-houses were far from satisfactory. During the summer of 1920, therefore, a systematic investigation was made of all such bath-houses, and the attention of the proprietors was called to unsanitary conditions wherever they were found.

In Rhode Island the State Board of Health has no direct authority to require improvements of this character, and it was necessary to devise other means to induce dilatory bath-house proprietors to clean up. For this purpose, therefore, a system of scoring the different estab-

lishments was worked out, with the idea that it might prove feasible to grant certificates of cleanliness to high-score places and thus induce the proprietors of low-score places to improve conditions through fear of loss of patronage.

Unfortunately the pressure of unexpected and more important work prevented follow-up work along these lines during the summer of 1921, but we have been assured by bathing-beach patrons that our preliminary work has resulted in a distinct improvement in a number of cases.

It may be of interest to those having similar problems to record at this time our method of scoring establishments of this kind and to illustrate that method by the detailed scores of the Rhode Island bath-houses as we found them in the summer of 1920.

METHOD OF SCORING.

In working out a score-card for this class of establishment, the various items to be considered may be grouped under two main headings: general sanitation and cleanliness, and possibility of transmission of disease.

The public who patronize and support these places are certainly entitled to the former, and they should also be protected from the latter. In evaluating these two groups we have considered the prevention of disease as the more important consideration and have given it somewhat greater weight.

Under the heading of general sanitation we have included construction, lighting and ventilation of buildings, furniture of dressing-rooms, towels, shower-baths, drinking water supply, and general cleanliness.

The type of construction of the building is important. Floors and walls should be of such type that they can readily be cleaned and kept free from vermin. This applies also to the equipment of the dressing-rooms. Lighting should be adequate in order that dirt or vermin may be readily detected. Good ventilation is essen-

tial in buildings which by the nature of their use are naturally damp.

Proper toilet facilities should be provided for both men and women. Where a bath-house is located in close proximity to a public comfort station, as is the case in some instances, toilets in the bath-house may sometimes be omitted. In such cases, due consideration should be given to the construction and cleanliness of the public toilet which serves as a substitute. Shower-baths, or other facilities for personal cleanliness of patrons, should also be included in the equipment of the establishment. Since salt-water bathing incites thirst in many people, a well-equipped bath-house should have clean, safe drinking water facilities for its patrons. The general cleanliness and care of the building and equipment should be given due weight in rating establishments of this kind.

The most important considerations in the prevention of transmission of disease are the methods employed for the washing, drying, and storage of bathing-suits and towels which are rented to patrons, or which are owned by patrons and cared for by the management. There is little question that many skin diseases have been transmitted in the past through the medium of improperly cleansed bathing-suits or towels. It is needless to say that no person suffering from a visible skin infection should be permitted to use a public bath-house, and the degree of supervision to prevent such use should be included in this part of the scoring system. The practice of many of these establishments of providing common drinking cups, towels, hairbrushes, combs, or similar toilet articles cannot be too strongly condemned and should be penalized in any system of scoring.

Our method of working out the evaluation of the various points in the score-card was somewhat as follows: A tabulation of the various points in each of the above groups was first made and a preliminary weighting given to each point. This score-card was then submitted to a

number of public-health men familiar with the conditions in our local bath-houses, and the preliminary evaluation was then changed to conform as closely as possible to the consensus of opinion of these various men. Each bath-house was then scored on the basis of this provisional score-card and the various houses listed in the order of the number of points credited to them. Without reference to the score-card or the number of points credited, the various bath-houses were then listed in order, from best to poorest, according to the conditions which were known to prevail at each place. These lists were then compared and a reevaluation of points was made until the arrangement of houses on the basis of total points scored in each of the two main groups was in agreement with the known conditions.

We fully realize that other public-health and sanitary officials might give somewhat different weights to our two main groups, and that they might evaluate the points in those groups very differently. The weighting and evaluation which appear to be fair, so far as they apply to the conditions which prevail at our Rhode Island bath-houses, might not be fair when applied elsewhere. We, therefore, submit the score-card as finally worked out for criticism and suggestion.

METHOD OF SCORING BATH-HOUSES IN RHODE ISLAND

CONSTRUCTION, ETC.	Perfect Score
Floor. Waterproof, good—2, fair—1, bad—0. Not waterproof, good—1, fair—0.5, bad—0.	
Walls, Waterproof, good—2, fair—1, bad—0. Not waterproof, good—1, fair—0.5, bad—0.	
Light in rooms and alleys. Good—4, fair—2, deficient—0.	
Ventilation. Good—4, fair—2, deficient—0.	
Furniture reasonably dirt proof and cleanable—1.	

Cleanliness. Rooms washed out each use—3, washed regularly, swept each use—2, swept regularly, not washed out regularly—1. Not cleaned regularly—0.

Disinfection. Approved disinfectant used on floor, walls and furniture, daily—3, weekly—1, not used—0 19

TOILETS.

Water flush closets, fixtures good, clean place, good light and ventilation—8. Good vault, clean place, good light and ventilation—6. Approved disinfectant used on floors, walls and fixtures, add 2. Approved disinfection of vault or other non-flush systems, add 2. No toilet, public toilet nearby, score one-half on public toilet as above. No toilet available—0. If place very dirty or unkept use negative score..... 10

SHOWER BATHS.

Showers available and sufficient—3. Foot tubs or pails in rooms if kept clean—2. Common foot tub, with running water if clean—1 3

DRINKING WATER.

Bubbling fountain—3. Individual paper cups—2. No drinking water, but public drinking fountain nearby score one-half on public fountain as above..... 3

TOILET ARTICLES.

No common hairbrushes—2.5, no combs—2.5. No common drinking cups—2.5, no common towels—2.5 10

SUPERVISION OVER PATRONS.

If diseased persons prohibited, according to probable effectiveness—1 to 5..... 5

CARE OF BATHING SUITS.

Washing by hand, cold water—2,
 warm water—4. Laundry wash-
 ing machine cold water—4, boil-
 ing water—9. Soap or effective
 disinfectants used, add 3. Dry-
 ing hot dryer laundry type—8,
 hot rooms—5. Open air drying
 —3. Extractor, centrifugal
 laundry type used—3. Storage,
 clean dry place, free from dust
 —2 25

CARE OF TOWELS.

Evaluation of points identical with
 care of bathing suits..... 25
 TOTAL POINTS 100

SANITARY CONDITION OF TWENTY-FOUR
RHODE ISLAND BATH-HOUSES

Nearly all of the buildings used as bath-houses at public bathing beaches in Rhode Island are low wooden structures cut up into small dressing-rooms. In the majority of cases, the parts of the buildings used for dressing-room purposes are arranged in alleys with dressing-rooms on each side, each dressing-room having a small window. For purposes of ventilation a considerable opening is often left between the side walls and the roof. The dressing-rooms are usually open at the top, and openings are usually left under the partitions in order to permit the floor, etc., to be flushed off with the hose. Each dressing-room is usually furnished with a bench, a chair, and a mirror.

In some establishments foot tubs or pails in which the patrons may wash sand and dirt from their feet, are provided in each dressing room. The use of these foot tubs is objectionable. In fact, one or two bath-house managers have stated to us that they had considerable trouble with children creating a nuisance in such pails or tubs. The better equipped bath-houses have fresh water showers in each alley for the use of patrons, and this may be considered the best practice. It might also be good practice to have a foot bath

with running water so arranged that all bathers entering the bath-house from the beach would have to walk through it. This would prevent sand and dirt from being tracked into the alleys and dressing-rooms, and would eliminate the necessity for the foot tubs. Such an arrangement, however, was not found at any of the Rhode Island establishments.

Through lack of proper sewer facilities, toilets at a number of bath-houses were of the privy type and in some cases were found to be in a very unclean condition. At two bath-houses, G. and Q., the condition of the toilets was so bad that extra points were deducted from the score.

In a few cases the management was using a disinfectant or vermifuge regularly in order to reduce possibility of vermin transmission to a minimum. Proper allowance was made for the probable effectiveness of the disinfectant used and the method and frequency of its application in scoring points for these houses.

In seven of the twenty-four houses, brushes, combs, and common drinking cups were provided and in six other houses, combs or hairbrushes, or both, were found. In all cases where such articles were found, the danger of the uncleanliness of such practice was called to the attention of the management. In a considerable number of cases it was stated that while the patrons asked for such articles, their maintenance was more or less of a nuisance and the managers would only be too glad to discontinue them if the State Board of Health would take the responsibility of ordering them out.

From a public-health viewpoint the care of suits and towels is probably the most important consideration when dealing with establishments of this kind.

The method of laundering suits at the different places varied from mere rinsing with cold water and drying in the open air, to washing in laundry washers

with hot water and soap and drying with hot air in the latest type of tumbler dryer. In a few of the smaller houses towels, or both suits and towels were sent out to a public laundry, and in scoring such houses the effective cleansing accomplished in a first class public laundry was given due weight. As a rule towels received much more care than bathing-suits, probably because dirt and stains showed up more readily on white than they do on colored materials. A number of managers claimed that they could not wash bathing-suits with soap and hot water because the color would run. In a few places bathing-suits owned by patrons were cared for by the management and many of the women's suits of this class were of silk or other material which it was claimed would be damaged by ordinary laundry methods. Such suits of course are worn only by the owners, and the factor of disease transmission would be negligible were it not for the fact that all suits, public and private, are handled promiscuously and rinsed in the same water. Common cleanliness alone requires that all suits be properly laundered each time used.

In a few places so-called disinfectants

were added to the water used for rinsing suits. These disinfectants were either comparatively ineffective, or were used in such small amounts that they had little value. In a number of places we were informed that "germs cannot live in sea water," and that there was, therefore, no need to wash bathing-suits. In numerous other instances it was asserted that air drying and the effect of sunlight was entirely sufficient to completely kill all germ life. When it is considered that the spores of the fungi causing certain skin diseases will resist boiling for ten minutes, and that the researches of the Committee on Bathing Places show there are a large number of cases in which transmission of such disease is attributed to the promiscuous use of bathing-suits or towels, the fallacy of these beliefs is evident.

At bath house X, all patrons furnished their own suits and towels. In scoring this house it would be manifestly unfair to mark the score-card zero for the various points included under care of suits and towels. On the other hand, we certainly have no basis for assuming that care of suits and towels at this place would be any better than would be indi-

TABLE SHOWING METHOD OF SCORING BATH-HOUSES
AT RHODE ISLAND BATHING BEACHES
Detailed Score by Points for Each Bath-House

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	
Floor, Walls, etc.....	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	
Lighting.....	4	4	4	4	4	2	2	2	2	2	3	3	4	0	2	2	2	4	0	2	2	0	0	4	
Ventilation.....	4	4	4	4	4	2	1	2	2	2	3	4	4	1	1	4	1	4	1	1	1	1	0	1	
Furniture.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Cleanliness.....	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	2	
Disinfection.....	0	0	0	0	0	1	0	1	0	0	1	1	0	1	0	0	0	0	0	0	0	0	3	0	
Toilets.....	8	4	8	8	8	10	d2	0	5	4	8	10	2	10	8	8	d5	8	8	8	8	4	1	6	
Showers, etc.....	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
Drinking Water.....	0	3	0	0	0	1	0	0	0	0	0	3	0	3	0	3	3	0	3	3	3	3	0	0	
Common Towels.....	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
Common Combs.....	2.5	0	0	0	2.5	0	0	0	2.5	2.5	2.5	2.5	0	0	0	0	0	0	0	0	0	2.5	0	2.5	
Common Brushes.....	2.5	0	0	2.5	2.5	0	0	2.5	2.5	2.5	2.5	2.5	0	2.5	0	0	2.5	0	0	0	0	2.5	2.5	2.5	
Common Drinking Cups.....	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	0	2.5	0	2.5	0	0	0	0	2.5	2.5	2.5	
Supervision Over Patrons.....	1	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bathing Suits—Washing.....	2	7	5	12	7	2	12	10	5	5	5	2	12	2	5	2	5	5	2	2	2	2	5	5	
Drying.....	7	3	8	3	6	3	11	8	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
Storage.....	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Towels—Washing.....	12	12	12	12	7	12	10	12	12	12	5	7	12	12	7	7	12	5	7	7	7	2	5	5	
Drying.....	7	11	8	3	6	11	8	11	6	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
Storage.....	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Total Points Scored.....	68	67	5	67	65	5	64	61	59	57	5	56	55	54	54	52	5	51	5	49	48	5	48	5	58*

"d" denotes deduction from total score.
*Total Score obtained by prorating other points. (No suits or towels).

cated by other parts of the score. The various points scored on this house were accordingly prorated in order to obtain a total which might be comparable with that of other houses.

The detailed scores for each of these houses is given in the accompanying table as an illustration of the part which each item in the score card has upon the total score.



CHRISTMAS SEAL CAMPAIGN

Over 900,000,000 Christmas seals have been distributed by the National Tuberculosis Association in preparation for the Fourteenth Annual Christmas Seal Sale which begins on December 1st. In every state of the Union and even in far away

tions. Five per cent of the gross proceeds goes to support the National Association. The remaining 95 per cent remains in the state where the seals are sold. Of this remainder, part goes to support the state work, but the larger share of the money stays in those communities where tuberculosis work is organized and goes to support local tuberculosis associations. The Christmas seal is the link that binds into a coördinated whole the entire tuberculosis movement.

Since the first national seal sale was organized in 1908, over \$16,000,000 has been realized from this source. This money has been spent by the national, state and local associations largely in organization and education work. A relatively small percentage has gone for relief or institutional care. The net result of the organization and education of the last twelve years has been to increase the institutional provision for the care of the tuberculous, including hospitals, sanatoria, nurses, dispensaries and preventoria by several hundred per cent. Figured in dollars and cents, the investment of \$16,000,000 by the various tuberculosis associations in the United States has resulted in the establishment of tuberculosis agencies which at a most conservative valuation today are worth over \$125,000,000 and which are annually spending for maintenance at least \$30,000,000. Most of these institutions are operated by official agencies, federal, state, municipal or county.



Christmas Seal, 1921

Philippine Islands, an active campaign for the sale of seals has been organized. Last year the Christmas seal sale netted a total of \$3,650,000 to the National, state and local tuberculosis associations of the country. While those in charge of the campaign recognize the serious financial stringency existing all over the country, by redoubled efforts it is expected that the proceeds will equal those of last year and may possibly exceed them.

The Christmas Seal Sale supports practically the entire non-official tuberculosis work conducted by the various associa-

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LOOKING FORWARD

It is both characteristic and fitting that the man who more than any other contributed to the historical development of American public-health work in the fifty years just closing, should be the first to turn his eyes toward the half century which is now opening before us, and present a definite objective for the organized public-health movement. While striplings of fifty and seventy-five swapped reminiscences about their deeds of sanitary and medical prowess, this incredible centenarian waived his opportunity for personal history, and, projecting his mind into the future, he might have said, with the narrator in "Locksley Hall"—

"Here about the beach I wander'd, nourishing a youth sublime,
With the fairy tales of science, and the long result of time;
When the centuries behind me like a fruitful land reposed;
When I clung to all the present for the promise that it closed:
When I dip't into the future far as human eye could see;
Saw the vision of the world, and all the wonder that would be."

Dr. Smith's main proposal was that the American Public Health Association establish as its definite aim during the coming year the extension of the average span of human life in America from its present length of about 45 years to 100 years, and initiate a long-time program over a period of fifty years looking toward the realization of that ideal. President McLaughlin will shortly appoint a committee to consider this proposal, and we may expect that some formal action will be taken upon it before another year has rolled around.

The practicability of such a prolongation of life is a first point which calls for serious consideration. As Dr. Hoffman has pointed out in his paper on "American Mortality Progress" in the Jubilee Volume of the Association, the fall

in the death-rate during recent years has reached a point considered absolutely unattainable a generation ago. During the 1890's, Dr. Samuel W. Abbott, secretary of the Massachusetts State Board of Health, and the majority of prominent sanitarians and statisticians assumed without question that a crude death-rate of 18 per 1,000 population was satisfactorily low, and that an average rate of less than 15 for the registration area was never to be expected. How far such assumptions have missed the mark of present-day levels is now universally known, and no contemporary scientific man would have the hardihood to make predictions of an impasse in the reduction of American mortality within the near future.

Dr. Charles Asbury Stephens, in a recent book called *Immortal Life: How It Will Be Achieved*, has elaborated the thesis of Metchnikoff to the effect that an indefinite extension of life is possible by eliminating the causes of animal decay at their source—the cell—and perfecting a cell food which will maintain tissue in permanent vitality. It is obvious that this biological issue must lie at the bottom of any fundamental consideration of longevity, and that we are only beginning to scratch the surface of the question of the relation between heredity and the negative forces of old age and disease. As Dr. Welch wittily said, Dr. Smith perhaps owes his great age and vitality, more than to any other one factor, to his very careful choice of his ancestors. We can probably never expect any permanent or extensive prolongation of the span of life until society begins to make definite application of both positive and restrictive eugenics.

Entirely apart from the possibilities of cell vitalization or of eugenic progress, however, Stephens admits the necessity of success in extirpating pathogenic organisms if death-rates are to be largely reduced. Whether or not the present efforts of preventive medicine to identify the etiological agents of cancer, leprosy, and other diseases still largely in the category of "incurable," are successful, there remains a generous margin of "preventability" in the diseases which have been, to a degree, brought under control. The classic "Report on National Vitality," prepared by Irving Fisher for President Roosevelt's National Conservation in 1909, contains in brief compass the most comprehensive and informed discussion of morbidity, mortality, and longevity, and their interrelations that has yet been published. Although more recent figures could possibly be adduced, nowhere have these possibilities of prolonged life been set forth more vividly. Professor Fisher shows, in a table which should be at the elbow of every health officer, the expectation of life at the median age of persons dying from each cause of death, ratios of "preventability," or rather, "postponability" for the causes named, and percentages of deaths from each cause to the total of all deaths. The ratios are derived from averages of estimates by some eighteen prominent physicians, based on both statistical and clinical experience, and are conservatively calculated on the basis of a definition of preventability as that "fraction of all deaths which would be avoided if knowledge now existing among well-informed men in the medical profession were actually applied in a reasonable way and to a reasonable extent." From these factors he calculates the number of years which would be added to the

average lifetime if deaths were prevented in the ratio of preventability given. The sum of these figures amounts to 14.06 years, divided among diseases of infancy (4.4 years), of childhood (1.51), middle age (6.82), and late life (1.33). The largest single additions were derived from diarrhea and enteritis (2.32 years), pulmonary tuberculosis (2.45), and lobar and unqualified pneumonia (.94).

Fisher, therefore, believes fifteen years to be a safe minimum estimate of possible prolongation of life, as it takes no account of future medical discoveries, the cumulative influence of hygiene, nor the effects upon health and vitality of eugenic propaganda. The present span of 45 years could thus be raised to 60 with reasonable effort. Whether it can be continued over the other 40 to the 100-mark, is meat for speculation. Mathematically it is plain that the progression will be geometrically retarded as the mortality rate approaches its fixed limit of "no deaths." The fight for improvement will not become easier, but harder.

And it is worth pausing a moment to consider whether the movement toward longevity must not face frankly the ultimate philosophical and ethical dilemmas which have engrossed the minds of the best and wisest of the race, from Plato to William James: "Is life worth living," and if 60 years of it are, would 100 be equally tolerable? The mere physical prolongation of life is not necessarily an unmixed good. There are involved here most profound inquiries into the significance of life and the social organization of humanity. For most people life is a losing race between ennui and the quest for "thrills." Those who have the capacity for a higher philosophy may learn something from the lifework and social purposes of Stephen Smith. In any event, health workers should realize that the years of man's life can never be divorced from the ends to which they are put.

SCIENTIFIC DEMOCRACY IN THE UNITED STATES

On the occasion of the now famous semicentennial dinner to Dr. Stephen Smith, the aged and venerable founder of the American Public Health Association, Dr. Hermann M. Biggs, state health commissioner of New York, devoted a part of his address to a consideration of foreign laboratories. Their number is surprising, their equipment first-class, and their work exact, but in spite of these, Dr. Biggs seemed to his hearers to convey his belief that European laboratories, from the standpoint of public health, are less used and less useful than the laboratories of America. This bears out the impression of many visitors to Europe that among the older nations science and practice are divorced. The European laboratory is for research; its character as an adjunct to popular hygiene has not been developed extensively.

The scientist in the English laboratory, for example, is well aware of the ease with which milk can be contaminated and of the dangers to children from unclean milk, but his knowledge is not applied. Milk "for infants and invalids" continues to be delivered throughout parts of London in a small pushcart containing a copper receptacle with a spigot scarcely two feet above the pavement. It is measured in a tin cup which afterward is hung by its long handle, wet and dripping, from the edge of the cart, exposed to dust and to mud-splashings. The

common American sealed bottle is almost unknown to the London public, and England lags fifty years behind New York in the care of this indispensable food for children, and of its containers.

Germany led the world in the establishment of mother-and-child health centers, but the fresh-air doctrine has never been added to German articles of faith. France, alarmed by a falling birth-rate, has worked hard to "save the babies," but not even in the poverty of war times would the French mother discard stuffy swaddling clothes for the looser, limb-freeing American layette. French bread is unquestionably better than American bread, but Americans by common consent prefer to buy their bread wrapped in oiled paper. The Parisian morning spectacle of maids going home with the unwrapped, yard-long loaf under their arms would distress the American housewife. Certainly the science of dentistry is far advanced in Europe, but it cannot be pretended that oral hygiene has made strides. Even the grande dames of fiction recall a visit to the dentist as an unusual event, not as a matter of semiannual habit. A "gold-stopped" tooth abroad is a patent of American citizenship and it is commonly believed by foreigners that Americans wear gold thus as a decoration, but the smile with which they announce this belief reveals the fact that not one foreign child in a thousand goes through the teeth-straightening, plate-wearing period so common among his American cousins. It is nowhere apparent in Europe that ability to masticate properly is recognized as an aid to health, and preservation of the teeth is set down as an American notion, off the same piece as the pride, inexplicable to a Teuton, that an American surgeon takes in finishing a surgical operation with the least possible permanent scar.

What Dr. Biggs has said is not to be taken as a criticism of European science. It was merely a comment on the failure of authorities and of the public to apply the discoveries of the laboratory to the every-day business of public health. Science for health has not been democratized abroad. She remains the cloistered nun of the laboratory, not the familiar friend and adviser of the man in the street as she is in America.



BOOKS AND REPORTS REVIEWED

Practical Tuberculosis. *Herbert F. Gammons, M. D.* St. Louis: C. V. Mosby Co., 1921. Pp. 158. Price, \$2.00.

This book is the work of a man who has lived his medical life with tuberculosis in all its forms. His experience has brought him to see and know tuberculosis in the environments of New England, Minnesota and the great Southwest. He has arrived at very definite ideas regarding the handling of tuberculosis cases. From this full life he has put down his observations for the benefit of his readers, who he believes will be the general

practitioners who often against their wills, both at the beginning and at the end of the diseases, have to handle in their homes people with tuberculosis. These physicians will find, not always in logical order, what this man has seen and believes in regard to tuberculosis. This information will not be clouded by any attempt to square this belief with the work and theories of other men. In this way the book will be of value to the persons for whom the book is written, for it is very sane in its suggestions.—A. K. STONE, M. D.

A BIBLIOGRAPHY OF REFERENCES TO HEALTH LEGISLATION

Compiled by JAMES A. TOBEY, National Health Council,
Washington, D. C.

FOREWORD

The following is a list of references to health legislation and matters of a closely allied nature. Only pamphlets, reprints and books are listed, no articles being included. For convenience the references are arranged under the following five headings:

1. Child Welfare.
2. Model Laws.
3. Municipal Laws.
4. Public Health (General).
5. State Laws.

Although an endeavor has been made to have this compilation complete, it is the first of the kind, and references which should have been included may have inadvertently been left out. It will be appreciated if attention is called to omissions.

1. CHILD WELFARE

Child Hygiene Laws of the Several States, A Synopsis of, Including School Medical Inspection Laws.—Public Health Bulletin No. 110, United States Public Health Service, Washington, D. C.

Child Labor Laws, Administration of: Part 1. Employment Certificate System, Connecticut.—Bureau Publication No. 12, United States Children's Bureau, Washington, D. C.

Child Labor Laws, Administration of: Part 2. Employment Certificate System, New York.—Bureau Publication No. 17, United States Children's Bureau, Washington, D. C.

Child Labor Laws, Administration of: Part 3. Employment Certificate System, Maryland.—Bureau Publication No. 41, United States Children's Bureau, Washington, D. C.

Child Labor Legislation in the United States.—Bureau Publication No. 10, United States Children's Bureau, Washington, D. C.

Child Labor, The States and.—Bureau Publication No. 58, United States Children's Bureau, Washington, D. C.

Child Protection, State Laws and Minimum Standards for (1920).—National Child Labor Committee, 105 East Twenty-second Street, New York, N. Y.

Children Before the Courts in Connecticut.—Bureau Publication No. 43, United States Children's Bureau, Washington, D. C.

Child Welfare Laws Passed in 1916, Summary of.—Bureau Publication No. 21, United States Children's Bureau, Washington, D. C.

Courts in the United States Hearing Children's Cases (1920).—Bureau Publication No. 65, United States Children's Bureau, Washington, D. C.

Health Provisions for State Laws Relating to Children.—National Child Health Council, Washington, D. C. This report also appeared in the following magazines:

Public Health Reports (U. S. Public Health Service), February 18, 1921.

School Life (U. S. Bureau of Education), February 18, 1921.

The Survey, February, 1921.

Mother and Child, February, 1921.

The American Child, March, 1921.

Journal of the American Medical Association, April 9, 1921.

The Nation's Health (formerly Modern Medicine), May, 1921.

Illegitimate Children, Better Laws for.—United States Children's Bureau, Washington, D. C.

Illegitimacy Laws of the United States, Analysis and Index.—Bureau Publication No. 42, United States Children's Bureau, Washington, D. C.

Juvenile Court Legislation, Summary of in United States (1920).—Bureau Publication No. 70, United States Children's Bureau, Washington, D. C.

Midwife Practice Laws of the States and Territories of the United States. (Reprint.) John A. Foote, M.D., Washington, D. C.

Mothers' Pensions, Laws Relating to in the United States, Canada, Denmark and New Zealand.—Bureau Publication No. 63, United States Children's Bureau, Washington, D. C.

Ophthalmia Neonatorum: An Analysis of the Laws and Regulations Relating Thereto in Force in the United States (1911).—Public Health Bulletin No. 49, United States Public Health Service, Washington, D. C.

Probation in Children's Courts (1921).—Bureau Publication No. 80, United States Children's Bureau, Washington, D. C.

2. MODEL LAWS

Births and Deaths: The Model State Law for the Registration of Births and Deaths.—Supplement No. 12, United States Public Health Service, Washington, D. C.

Children: Report of the Committee on Health Provisions for State Laws Relating to Children.—National Child Health Council, Washington, D. C.

Health: Model Health Code.—American Public Health Association, 370 Seventh Avenue, New York, N. Y. 15 cents.

Housing: Model Housing Law.—Russell Sage Foundation, 130 East Twenty-second Street, New York, N. Y. \$4.

Milk: Guide for Formulating a Milk Ordinance.—Bulletin No. 585, United States Department of Agriculture, Washington, D. C.

Morbidity: The Model State Law for Morbidity Reports.—Reprint No. 285 from the Public Health Reports, United States Public Health Service, Washington, D. C.

Mosquitoes: Model Mosquito Ordinance.—Reprint No. 563 from the Public Health Reports, United States Public Health Service, Washington, D. C.

Saving Sight: Model Legislation for Saving Sight (an outline).—National Committee for the Prevention of Blindness, 130 East Twenty-second Street, New York, N. Y. Also in Cleveland Hospital and Health Survey, Part 2, page 195. Cleveland Hospital Council, 308 Anisfield Building, Cleveland, O. 50 cents.

Venereal Diseases: Compilation of Suggested and Adjudicated Ordinances Which Have Proved Successful in Combating Venereal Diseases.—V. D. Bulletin No. 39, United States Public Health Service, Washington, D. C.

3. MUNICIPAL LAWS

A complete list of pamphlets containing municipal laws of individual cities will not be given. Most of the larger cities have compiled their health laws in one volume. Other material is as follows:

Municipal ordinances, rules, and regulations pertaining to public hygiene of cities of the United States, published by the United States Public Health Service, Washington, D. C., as follows:

January 1, 1910-June 30, 1911—Reprint No. 70.

July 1-December 31, 1911—Reprint No. 121.

1912—Reprint No. 199.

1913—Reprint No. 230.

1914—Reprint No. 273.

1915—Reprint No. 364.

1916—Reprint No. 388.

1917-1919—Supplement No. 40.

Smoke Abatement and City Smoke Ordinances.—Bulletin No. 49, United States Bureau of Mines, Washington, D. C.

Suggested Ordinance for Cities.—Compiled by Institute of Makers of Explosives, New York, N. Y.

(See also under Model Laws.)

4. PUBLIC HEALTH (GENERAL)

Common Drinking Cups and Roller Towels: An Analysis of the Laws and Regulations Relating Thereto in Force in the United States (1912).—Public Health Bulletin No. 57, Government Printing Office, Washington, D. C. 5 cents.

Communicable Diseases: An Analysis of the Laws and Regulation for the Control Thereof in Force in the United States (1913).—Public Health Bulletin No. 62, Government Printing Office, Washington, D. C. 50 cents.

Court Decisions: Court Decisions Pertaining to Public Health (Previous to 1916).—Reprint No. 342, United States Public Health Service, Washington, D. C.

Court Decisions Pertaining to Public Health (1916).—Reprint No. 410, United States Public Health Service, Washington, D. C.

Court Decisions Relating to Morbidity Reports (1915).—Reprint No. 205, from Public Health Reports, Government Printing Office, Washington, D. C. 5 cents.

Drugs: Digest of Laws and Regulations Relating to Habit-Forming Drugs.—1912, Public Health Bulletin 56; 1912 and 1913, Reprint No. 146; 1913 and 1914, Reprint No. 240; 1915, Reprint No. 267; 1916, Reprint No. 321. All from the United States Public Health Service, Washington, D. C.

Food and Drugs Act: Rules and Regulations for Enforcement of the Food and Drugs Act (1913).—Agriculture Circular No. 21, United States Department of Agriculture, Washington, D. C.

Food and Food Control Laws: 1905, Chemistry Bulletin No. 69; 1906, Chemistry Bulletin No. 104; 1907, Chemistry Bulletin No. 112; 1908, Chemistry Bulletin No. 121. All

from the United States Bureau of Chemistry, Washington, D. C.

Lighting, Code of, for Factories, Mills and Other Places (1919).—Reprint No. 499 from Public Health Reports, United States Public Health Service, Washington, D. C.

National Legislation: The National Health Council, 411 Eighteenth Street, Washington, D. C., issues a bi-weekly statement of national health legislation. The price of this is 20 cents to non-members of the Council.

Night Work Laws in the United States.—Bulletin No. 7, United States Women's Bureau, Washington, D. C.

Organization, Powers, and Duties of Health Authorities: An Analysis of the Laws and Regulations Relating Thereto in Force in the United States (1912).—Public Health Bulletin No. 54, United States Public Health Service, Washington, D. C.

Public Health, Legal Principles of. By H. B. Hemenway, M. D. T. H. Flood & Co. Chicago. \$7.50.

Quarantine, Interstate Regulations of the United States (1916).—Miscellaneous Publication No. 1, United States Public Health Service, Washington, D. C.

Quarantine Laws and Regulations of the United States (1910).—Revised edition, June, 1920. United States Public Health Service, Washington, D. C.

Railway Sanitary Code (1920). United States Railroad Administration, Washington, D. C.

Social Hygiene Legislation Manual (1921).—American Social Hygiene Association, 370 Seventh Avenue, New York, N. Y.

Stream Pollution: A Digest of Judicial Decisions and a Compilation of Legislation Relating to the Subject (1917).—Public Health Bulletin No. 87, United States Public Health Service, Washington, D. C.

United States Public Health Service, Regulations for the Government of (1920).—United States Public Health Service, Washington, D. C.

Vaccination: An Analysis of the Laws and Regulations Relating Thereto in Force in the United States (1919).—Public Health Bulletin No. 52, United States Public Health Service, Washington, D. C.

Viruses, etc.: Regulations for the Sale of Viruses, Serums, Toxins, and Analogous Products in the District of Columbia and

in Interstate Traffic (1919).—Miscellaneous Publication No. 10, United States Public Health Service, Washington, D. C.

Vital and Penal Statistics, Report of Committee on, to National Conference of Commissioners on Uniform State Laws, Madison, Wis.—(E. A. Gilmore, Madison, Wis.)

Vital Statistic Laws.—American Medical Association, 535 North Dearborn Street, Chicago, Ill.

Water: Review of Laws Forbidding Pollution of Inland Waters in the United States (1905).—Water Supply Paper No. 152, United States Geological Survey, Washington, D. C.

5. STATE LAWS

The following publications have been issued by States concerning health laws:

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Arizona: Public Health Laws (1919).

Arkansas: Revised Bulletin of the Rules and Regulations of the State Board of Health of Arkansas (1918).

California: General Health Laws (1919).

Colorado: Laws and Regulations, Colorado State Board of Health (1916).

Connecticut: Sanitary Code (1918).

Delaware: Eighteenth Biennial Report of the Board of Health (1912-1915).

District of Columbia: Health Laws.

Georgia: The Ellis Health Law (1919); Health Laws (1914 and 1918); Vital Statistics Law (1919).

Idaho: Hotel Law (1911); Food and Drugs Law (1917); Milk and Dairy Products Law (1917); Slaughter-House and Meat Law (1917); Contagious Diseases (1921).

Illinois: General Information and Laws (1917); Notes on Bill Drafting in Illinois (1920), Legislative Reference Bureau, Springfield, Ill.

Indiana: Manual of Instructions for School Authorities and School Physicians (1911).

Iowa: Rules and Regulations (1917); Law on Venereal Diseases (1919).

Kansas: Laws, Rules and Regulations Relating to Public Health (1919).

Kentucky: Public Health Manual—Laws, Rules and Court Decisions (1919).

Maine: Abstract of the Health Laws (1919); Rules and Regulations in Relation to Plumbing Work (1920).

Maryland: The Laws of Maryland Relating to Public Health (1915).

Massachusetts: Laws relative to Prevention of Disease (1915); Laws Relative to Nuisances, Sources of Filth, and Causes of Sickness (in General) (1915); Laws Relating to Milk and Milk Products (1919); Special Laws Relating to Foods and Drugs (1919); Manual of Health Laws (1915).

Michigan: Laws Relating to Public Health (1917, 1919).

Minnesota: State Health Laws and Regulations (1919).

Mississippi: Rules and Regulations Governing Infectious Diseases and Sanitation (1918); Vital Statistics Law (1912).

Missouri: Health Officers' Manual (1918); Laws Governing Registration of Deaths and Births.

Montana: Public Health Laws and Regulations (1915); Hotel Law, Rules and Regulations (1919); Food and Drug Laws, Rules and Regulations (1919).

Nebraska: Rules and Regulations (1919).

Nevada: Health Laws (1919); Rules and Regulations Governing the Reporting of Certain Diseases and Management of Quarantine (1920).

New Hampshire: The Principal Public Health Laws (1915); Abstract of Laws and Regulations Relating to the Sale of Foods and Medicines (1919).

New Jersey: Public Health Laws (1918); Reprints on specific regulations; The Sanitary Code (1917).

New Mexico: The Public Health Law (1919); Reprints of various regulations.

New York: Public Health Manual (1919); Compilation of Laws, Regulations and Agencies Relating to Tuberculosis (1918); Model Health Regulations for Communities.

North Carolina: Reprints on specific regulations; Compilation of Public Health Laws (1917); Social Laws and Agencies, American Red Cross Handbook, Southern Division, Atlanta, Ga.

Ohio: Laws Relating to Occupational Diseases and Industrial Hygiene (1913); Public Health Manual (1920).

Oklahoma: Laws, Rules and Regulations

Governing Sanitation (1919); Food and Drug Law (1911).

Oregon: Health Laws (1919).

Pennsylvania: Synopsis of Health Laws (1920).

Rhode Island: Rules Governing Control of Contagious Diseases (1919).

South Carolina: Sanitary Code (1919).

South Dakota: Laws Relative to Public Health and Safety (1919).

Texas: Vital Statistics Manual.

Vermont: General Laws Relating to the State Board of Health (1918).

Virginia: Reprints of various laws and regulations.

Washington: Rules and Regulations and Statutes (1917); Rules Relating to Reporting of Venereal Diseases (1919).

West Virginia: Health Laws (1919).

Wisconsin: Rules and Extracts from Laws Pertaining to the Prevention and Control of Communicable Diseases (1919); Powers and Duties of Boards of Health (1918).

Wyoming: Synopsis of Laws (1919).

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1913—Reprint No. 264.

1914—Reprint No. 279.

1915—Reprint No. 338.

1916—Reprint No. 406.

1917—Supplement No. 37.

1918—Supplement No. 38.

Dependent Classes: Summary of State Laws Relative to the Care of the Dependent Classes (1913).—United States Bureau of the Census, Washington, D. C. 60 cents.

Explosives: Suggested State Law Compiled by Institute of Makers of Explosives, New York, N. Y.

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Insane: Summaries of State Laws Relating to the Insane (1917).—National Committee for Mental Hygiene, 370 Seventh Avenue, New York, N. Y.

Physical Education: Recent State Legisla-

tion for Physical Education (1918).—Bulletin No. 40, United States Bureau of Education, Washington, D. C.

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No. 47, United States Bureau of Education, Washington, D. C. (Includes School Hygiene Laws.)

(See also under Child Welfare and Model Laws.)

ASSOCIATION NEWS

LIST OF NEW MEMBERS

Proposed for Election to the A. P. H. A. November 1 to November 30, inclusive.

Names of Sponsors are set in **Bold Face Type**.

Names of New Members are set in **Light Face Type**

CONNECTICUT

Miss Cora B. Conklin, New Haven.
Catherine Flang, R. N., 1485 Chapel St., New Haven, Conn.

Anna I. Van Saun, New Haven.
Miss Isabelle I. Graves, care Dept. of Health, New Haven, Conn.

DISTRICT OF COLUMBIA

A. W. Hedrich, New York, N. Y.
Mr. Rollo H. Britten, U. S. P. Health Service, Washington, D. C.

FLORIDA

B. L. Arms, M. D., Director State Board of Health, Jacksonville, Fla.
H. D. Venters, B. S., State Laboratory, Tampa, Florida.

George A. Dame, M. D., Florida State Board of Health, Jacksonville, Fla.

Capt. William H. Gillette, State Health Board, Jacksonville, Fla. Full time U. S. P. H. S. Regional Consultant.

Ralph E. Stevens, M. D., Sanford, Fla. Director, V. D. Clinic, State Board of Health.
T. A. Blinn, M. D., State Board of Health Bldg., Jacksonville, Fla. District Health Officer.

D. G. Milton, M. D., Loughridge, Fla. Director Venereal Clinic.
J. A. Hague, M. D., Alton, Fla. Physician, Director, V. D. Clinic.

ILLINOIS

John Dill Robertson, M. D., City Dept. of Health, Chicago, Ill.

Lee Alexander Stone, M. D., 5406 Glenwood Ave., Chicago, Ill. Chief, Bureau of Hospitals, Social and Industrial Hygiene, Dept. of Health.

Mrs. Ira Couch Wood, Chicago, Ill.

Mr. Cyrus H. McCormick, Chicago, Ill. Trustee, Elizabeth McCormick Mem. Fund.

M. M. Printz, Secretary, Chicago Dental Society, Chicago, Ill.

Heinrich Krause, D.D.S., 1927 Blue Island Ave., Chicago, Ill.

IOWA

Guilford H. Sumner, M. D., Des Moines, Iowa.

G. F. Severs, M. D., Centerville, Iowa.
H. C. Eschbach, M. D., 23½ So. Clinton St., Albia, Iowa. Member of Iowa State Board of Health.

Charles S. Grant, M. D., 17½ S. Dubuque St., Iowa City, Iowa.

MISSISSIPPI

R. W. Hall, M. D., Mississippi State Board of Health, Bureau of Vital Statistics, Jackson, Miss.
Dr. C. R. Stingily, Mississippi State Board of Health, Jackson, Miss. State Bacteriologist.

NEW JERSEY

Geo. W. Simons, Jr., State Board of Health, Jacksonville, Fla.

Arthur M. Crane, P. O. Box A, Nutley, N. J. Treasurer, American Association for Promoting Hygiene and Public Baths.

NEW YORK

Miss Anna A. Ewing, Atlantic Division, A. R. C., New York, N. Y.

Miss Leslie Wentzel, care A. R. C., 44 E. 23rd St., New York, N. Y. Director of Nursing Service.

Mrs. Ethel M. Hendricksen, Tuberculosis Association of Rochester and Monroe Co., Rochester, N. Y.

Dr. Mary Moore Hoyt, 35 Chestnut St., Rochester, N. Y.

Dr. F. L. Rector, 39 E. 39th St., New York, N. Y.

Henry J. Daube, B. S., 611 E. 7th St., Brooklyn, N. Y. Chemist.

L. M. Wachter, Saratoga, N. Y.

Ada L. Bailey, Bacteriologist, Saratoga Hospital, Saratoga, N. Y. Bacteriologist, Saratoga County Laboratory.

S. Dana Hubbard, M. D., Department of Health, City of New York.

William Jacobsohn, M. D., 233 West 111th St., New York, N. Y. Department of Health, City of New York.

Miss Mary B. Kirkbride, N. Y. State Dept. of Health, Albany, N. Y.

Miss Marion F. Dondale, 267 Ontario St., Albany, N. Y. Scientific Secretary, Division of Laboratories and Research, N. Y. State Dept. of Health.

Hon. E. T. Adney, Kingston, Ont., Canada.

Charles P. Gerrish, M. D., Long Lake, Hamilton County, N. Y. Sanitary Engineer, Epidemiologist.

NORTH CAROLINA

J. W. Kellogg, Raleigh, N. C.

Miss Josephine A. Piatt, N. C. College for Women, Greensboro, N. C. Student.

TENNESSEE

W. L. Holt, M. D., University of Tennessee, Knoxville, Tenn.

Marion L. Bingham, M. D., Dept. of Hygiene, University of Tennessee, Knoxville, Tenn.

Dr. Olin West, Nashville, Tenn.

E. L. Bishop, M. D., 405 7th Ave., North, Nashville, Tenn. Director, Rural Sanitation, State Board of Health.

WISCONSIN

Miss N. E. Casey, St. Mary's Hospital, Oshkosh, Wis.

Frances Corcoran, P. H. N., 816 Prentice Ave., Ashland, Wis.

EMPLOYMENT BUREAU

HELP WANTED

Help wanted announcements will be carried free in this column until further notice. Copy goes to the printer on the 5th of each month for publication on the 20th. Mail to New York office as early as possible.

In answering keyed advertisements, please mail replies separately to editorial office in New York City. In replying give age, professional training, salary requirements, previous positions held and three or more references.

Wanted: Immediately, bacteriologist for city of 60,000 population. Salary \$1,500. Address Chairman, Board of Health, New Britain, Conn.

Wanted: Full-time assistant health officer to act as city and county physician. Population of city and county 42,000. Salary \$2,400 and transportation. Applicant should outline his personal and professional qualifications. Apply Dr. John H. Hamilton, Health Officer, Wilmington, N. C.

Wanted: Laboratory director at the Johnson City National Sanatorium. Salary \$2,600 and furnished quarters, light and heat. Address Medical Director, National Sanatorium, Johnson City, Tenn.

Wanted: Graduate nurse to introduce and conduct courses in home nursing, and to supervise nursing activities in a secondary school in a large city in the Middle West. College trained woman preferred. An excellent opportunity for one with initiative. Address 472, care this JOURNAL, New York address.

POSITIONS WANTED

Positions wanted announcements will henceforth be carried in this column. The charge is \$2 per insertion. Copy should be received at this office by the 10th of the month.

Wanted: Qualified sanitarian, recent graduate of Harvard-Technology School of Public Health, wants position. Experience

in public-health work prior to taking C. P. H. degree. District health officer, northern Maine district, one year. Division director, Maine State Department of Health, two years, preceded by nineteen years general medical and surgical practice, including four years city dispensary service, four years medical inspector of schools and six years neurologist to Central Maine General Hospital. Best of references furnished. Now open to engagement. Address 192, H. E. H., care this JOURNAL, New York address.

Wanted: Position as full-time health officer or epidemiologist by a physician who holds D. P. H. and other college degrees, has had much experience in the government, state and municipal service. Best of references. Salary secondary to good working conditions. Address W. M., 192, care this JOURNAL, New York address.

Wanted: Position by a competent bacteriologist in commercial, state, or city laboratory. Have had extensive experience in bacteriological and chemical laboratories. Will be available first of December and go anywhere. Prefer a permanent place with moderate salary. Married. If you need an honest, conscientious man who tries to produce class-A work and can furnish best of references, write or wire M. S. Tarpinian, Port Arthur, Texas.

Wanted: Experienced bacteriologist and laboratory technician desires position on Pacific Coast. Thoroughly skilled in physiological chemistry, Wassermann's, serological and all routine laboratory work. Prefer work in hospital, or with association of physicians. References. Address 194, S. M. C., care this JOURNAL, New York address.

Wanted: Situation in Central West. State health department work preferred. Broad experience in administrative, medical and health work. Address 195, care this JOURNAL, New York address.

PUBLIC HEALTH NOTES

Abstracts by D. GREENE, M. D., JAMES A. TOBEY and HOMER N. CALVER.

Laymen in Public Health Work.—Public-health work is so largely influenced—it may almost be said, dominated and controlled—by the laity, organized into many special and uncorrelated or imperfectly correlated groups, local, national, and even international, that it is no small wonder that many in the medical profession view the future with no little concern. These organizations are themselves but the offspring of public opinion, and they are found in the long run to influence public opinion. Such being the case, no one can gainsay the fact that lay organizations for the protection and promotion of public health—meaning thereby organizations into which the physician enters on the same basis as a layman—are bound materially to influence the future evolution of the medical profession, for good or for ill.

Unfortunately the organized medical profession as represented by the great national, state and county societies has either not concerned itself with the situation at all or else has not fully occupied the field, so that physicians who have interested themselves with respect to the situation have done so even as individuals, or in small groups that can hardly be said to represent fairly the medical profession at large; and too often the cause of the medical profession generally has been injured by the tactics of such detached workers and detached groups. It may well be urged, therefore, that the profession as a whole undertake seriously a study of the causes of existing conditions in so far as they may be liable to react harmfully on the future development of the medical profession, adopt a program of its own that is designed to correct such evils as may now exist, to prevent similar evils or others in the future, and devise proper agencies to procure the adoption of such a program by the laymen and lay-organizations operating in the field of public health.—*Monthly Bulletin*, City of Boston Health Department, March, 1921.—(J. A. T.)



A Congressional Tribute to Heroes of Health.—The House of Representatives was recently discussing a bill to pension the widow

of Warren G. Jernegan, who, as a soldier, assisted in the discovery of the prevention of yellow fever, under Reed, Carroll, and Lazear, by submitting to various experiments. Mr. Reed, of West Virginia, spoke as follows:

“Mr. Speaker, I am bound to admit that this bill presents something different from the ordinary pension. It is true that we have a large pension roll already. The Government has very properly pensioned men who have carried our flag to victory, carried it for the preservation of the Government, of American institutions, and for the safeguarding of American civilization. The glory and grandeur of our country is, after all, found in the health, strength and the efficiency of its men and women. We hope there will be no more wars. We fervently pray that the peace conference about to meet will bring about an era of universal peace, and then, instead of pensioning the heroes of war, it will be the heroes of peace that will claim our attention; those heroes who may voluntarily give their lives that the race may grow stronger and greater. Such awards as this bill proposes present a different appeal to our generosity, and this Government can well afford to go on record as favoring a liberal policy towards its citizens who offer themselves for this unselfish kind of service. Let us hope that the American heroes of the future may be heroes of peace, heroes who give themselves that the race may be strengthened and human diseases eliminated.

“The science of medicine, Mr. Speaker, is yet in its infancy. A great deal has been accomplished. We have a wonderful America, but it would be a mighty poor America if it were peopled by a race of invalids. The wealth of America is not to be measured by her great cities, fertile farms, railroads, institutions, and industries. The real wealth of America is the health, strength and character of her men and women. The men who offer themselves as martyrs for the advancement of medical science ought to be recognized, and this Congress will make no mistake in passing this bill and by its action to-day saying, ‘Thus do we honor the heroes in the interest of humanity and progress.’ There will

never be many awards of this nature and it cannot be maintained that the precedent is unwise." (Applause).—(J. A. T.)



The Dental Hygienist.—As the interest in oral hygiene progresses and the number of dental hygienists increase, there is a growing difference of opinion in regard to the work and training of a dental hygienist. Some advocate: (1) nothing but cleaning and teaching oral hygiene; (2) cleaning and assisting in dentistry and oral surgery; (3) nothing but teaching general and dental hygiene and nutrition.

The title may be influenced by the type of work to be done, "dental hygienist" signifying oral prophylactic work or instruction exclusively in dental hygiene, "dental nurse" signifying dental assistance similar to that given by medical or surgical nurse, or work comparable to that of a public-health nurse. One working exclusively in dental and general hygiene and nutrition could well be called a "dental social service worker."

The order of the importance of the dental hygienist's work appears to be as follows: (1) in public clinics and institutions; (2) in private offices; while the type of work in each may be classified as (a) oral prophylaxis; (b) oral health instruction; (c) assisting in dental practice.

The Forsyth Dental Infirmary in its Training School has held to the broad view of giving general training and experience in all phases of work which might be done by the dental hygienist. Thus far this has been a source of satisfaction inasmuch as its graduates are fitted to do anything or everything which might be considered the work of a dental hygienist. This appears to be a conservative plan until such a time as there is a more unanimous opinion as to what should be her particular field. But whatever is done, to accomplish the most and in the most logical way the dental hygienist will follow the dental profession, and whatever it stands for in ten or twenty-five years will determine the type of work of the dental hygienist of that day.—Dr. H. DeW. Cross in the *Dental Hygiene News Letter*, (California), Aug., 1921.—(J. A. T.)



Nutritional Value of Soft Drinks.—The four classes of soft drinks are:

1. Those compounded from artificial flavors and coloring matter, and artificially sweetened.

2. Those compounded as above, and sweetened with sucrose.

3. Drinks compounded from fruit juices or syrup, with or without the addition of sucrose.

4. Drinks compounded from syrup containing stimulants such as caffeine.

The drinks of class one are now practically eliminated. The examination of a large number of bottled drinks in the second class indicated that the sugar contained in the individual bottles varied from five tenths to nine tenths of an ounce, and their food value lies mainly in this added sugar. In addition to the sugar, the drink often contains acids, chiefly citric, having a certain therapeutic and hygienic value. Drinks in class three are by far the most valuable of all from the nutritional standpoint, because in addition to the calories furnished by the added sugar, they contain no inconsiderable amount of fruit juices. The chief beverage in the fourth class is Coca Cola, the basis of which is a syrup consisting of about one half sugar, one third water, with less than one per cent of phosphoric acid, and the caffeine contained being from 0.92 to 1.30 grains per fluid ounce. The syrup also contains small quantities of caramel, glycerine and lime juice, essential oils and plant extractives. The author states that it would be somewhat foolish to condemn the use of Coca Cola because it contains caffeine when this same alkaloid is found in tea and coffee. All statements relative to the nutritional value of bottled soft drinks are based on the assumption that the products are manufactured under clean and sanitary surroundings.—Jaffa, *Bull. Cal. State Bd. of Health*, July, 1921.—(H. N. C.)



Diphtheria Control.—While there has been a marked advancement made in the treatment of diphtheria with a corresponding decrease in the mortality rate since the introduction of antitoxin, there has not been the reduction in the morbidity that might reasonably have been expected. This constant high incidence becomes more remarkable when it is realized that all necessary laboratory aid and epidemiologic knowledge is at hand to prevent and control diphtheria outbreaks.

Reaching beyond this, however, is our knowledge of the Schick test for the determination of those susceptible to diphtheria

infection, and of the toxin-antitoxin mixture for the immunization of the nonimmune.

In spite of the fact that all agencies necessary for the eradication of diphtheria from the community are available, we still have the infection mostly in endemic form. A careful study of the various factors entering into our failure to make much progress in the prevention of diphtheria brings to light the fact that not sufficient intensive work is done by public-health authorities, save under epidemic conditions. Little or no effort is expended to find the source of infection in the sporadic case, and carelessness in culturing for release of quarantine adds many cases to our yearly total. Often effort is directed to the school-age group, with resulting school cultures, while perhaps the pre-school-age group is far more likely to be the source of infection.

What is the remedy for this condition?

1. Education of physicians and the laity to the fact that all agencies are available for the immunization of the susceptible, and for the diagnosis and the treatment of the disease.

2. Intelligent study and treatment of the "carrier" or, perhaps more correctly, the "missed case."

3. Education of the laity to the fact that diphtheria is often insidious in onset and mild in course, and recovery is uneventful for the patient, yet serves as the focus of multiple infections of a far more virulent type.

4. Education of local health officers as to the necessity of intensive investigation of the source of each case, and of the necessity of immunizing other members of the infected household.—B. W. Carey, *Jour. A. M. A.*, Aug. 27, 1921, 668.—(D. G.)



Seasonal Variation of Rickets.—Hess and Unger show that milk from pasture-fed cows (summer milk) failed to prevent the development or to decrease the incidence of rickets during the winter. On the other hand, treatment with ultraviolet rays or with sunlight brought about calcification of the bones during the winter as demonstrated by means of the roentgen rays. These contrasting results lead to the conclusion that hygienic factors, especially sunlight, and not dietetic factors, play the dominant rôle in the marked seasonal variation of this disorder.—A. F. Hess and L. J. Unger.—*Amer. Jour. Dis. Children*, Aug., 1921, 186.—(D. G.)

Results of Prenatal Care.—The author describes the results of prenatal care based on 1,000 consecutive deliveries. A low infant mortality rate was obtained, and that this low rate is due largely to prenatal care is shown by a comparison of 3 series of cases. Series 1 consisted of 1,000 cases under prenatal supervision. The mortality rate in this series was 2.5 per cent. Series 2 consisted of 1,000 cases under nursing supervision of the Visiting Nurses Association with no systematic medical supervision, and the mortality rate in this series was 4.7 per cent. Series 3 consisted of 1,000 cases in which there was no prenatal care. The mortality rate in this series was 7.9 per cent.—A. C. Beck, *Jour. A. M. A.*, Aug. 6, 1921, 457.—(D. G.)



Incidence of Hereditary Syphilis.—This study represents an attempt to make an estimate of the incidence of syphilis based on a representative group of unselected individuals in St. Louis. An analysis of the placenta and the Wassermann reaction on the umbilical cord blood was made on a series of 2,030 unselected infants. By examining the blood of 389 of these infants after 2 months of age, it was determined that the proportion of cases of hereditary syphilis that could be certainly diagnosed by placental examination alone was 27 per cent, while from the Wassermann reaction on the cord blood, 63.6 per cent of the cases could be recognized. By applying these two methods to the entire series the number of cases of hereditary syphilis in the whole group was determined. The incidence of hereditary syphilis established by this method is 15 per cent in the colored race, 1.8 per cent in the poor of the white race, and less than 1 per cent in the well-to-do social classes. By applying these figures to the entire population of St. Louis, it is estimated that the incidence of hereditary syphilis at birth in this city is 3 per cent, of which the colored population, although only 9 per cent of the total, contributes approximately half the cases.—P. C. Jeans and J. V. Cooke, *Amer. Jour. Dis. Children*, Oct., 1921, 402.—(D. G.)



Botulinus Infection of Canned Spinach.—*Bacillus botulinus*, Type A, is able to multiply and to produce its characteristic toxin in canned spinach, although the development of the organism in this food product was found

to be somewhat irregular. In some instances, there was evidence of a rapid multiplication, while in others there was apparently neither growth nor toxin formation. In all of the latter cases, however, the organism was found to be viable. A temperature of 37 C., as contrasted with room temperature, accelerated the development to a certain extent. When multiplication had progressed readily, 0.5 c.c. of the spinach juice per os proved sufficient to kill guinea-pigs, usually within eighteen hours.

The growth of *B. botulinus* in canned spinach is accompanied by the evolution of gas as well as by the elaboration of the specific toxin. In only one instance had toxin formation advanced to such a stage as to produce a fatal result, while at the same time gas production either had not occurred or was insufficient to cause bulging of the can.

Of 174 samples of canned spinach taken from suspected lots, *B. botulinus* or its toxin was found in six. In every case, the organism was of the A type. These six toxic cans were all "hard swells," and when opened the odor was distinctly offensive.

The destruction of foodstuffs deemed to be abnormal, either by appearance of the containers or by the odor, should prevent the greater number of the outbreaks of botulism. From the public-health aspect of the problem, the last point is of especial importance.—S. A. Koser, R. B. Edmondson and L. T. Giltner, *J. A. M. A.*, Oct. 15, 1921, 1250.—(D. G.)



Etiology of Diabetes.—The records of 229 diabetic patients have been analyzed by Mitchell with a view to suspected etiologic agencies. His study is based on 116 diabetics who could give reasonably trustworthy statements concerning diseases in their grandparents (exceptionally the great grandparents), parents, uncles and aunts, cousins, nephews and nieces, and children. It is known that some races and families are specially subject to infectious or toxic damage of certain viscera; the lesions are readily revealed by necropsies, and clinical histories show the high frequency of the hereditary association. When an individual, with or without hereditary susceptibility, becomes potentially diabetic through pancreatic injury, overeating (perhaps of carbohydrate especially) and obesity contribute to increase this tendency and develop an active diabetes, while abstemious living may keep the disorder latent throughout life. Because

the degree of pancreatic damage which suffices for active diabetes in an obese person is insufficient for producing it in a thin person, diabetes developing in thin persons is generally more severe than that which occurs in the obese. Prevention of diabetes, even in the susceptible families, may be expected more and more from prevention of the primary cause, through prevention and improved treatment of infections. Avoidance of gluttony (in carbohydrate or other food) and of obesity Mitchell says may be expected to prevent a large proportion of latent cases from developing. Precautions against infections (early removal of threatening foci in teeth, tonsils, appendix, gall-bladder, etc.) and against dietary excesses are most important in the members of predisposed families.—J. W. Mitchell, *Med. Record*, Oct. 1, 1921, 575.—(D. G.)



Looking Glasses in Schools.—To encourage cleanliness and tidiness among school children Dr. D. J. Thomas, M.O.H., and Dr. Z. M. Scruby have recommended to the Acton education committee that mirrors should form part of the ordinary school equipment. They write: "A looking-glass has a very distinct educational value, and the more careless the home, the more profitable it is that a looking-glass (if one is found at all) will be only a few square inches in size. The consequence is that children who are frequently reprimanded for their untidiness and dirtiness scarcely ever see themselves, and so lose the strong personal incentive to improvement which they might gain if they had the opportunity of contrasting their own untidy appearance with the neatness of many of their school-fellows."—*Med. Officer*, Oct. 1, 1921, 152.—(D. G.)



Maternity Center Association Routines.—The Maternity Center Association, 370 Seventh Avenue, New York City, has recently issued a circular, "Routines of the Maternity Center Association," which gives valuable data concerning maternity and infant welfare. The subject matter is classified under the following heads: (1) Clinic Routine, including the subjects of nurse's duties; doctor's duties as outlined on doctor's record; duties of clinic assistants; (2) Clinic Equipment Standard; (3) Routine for Prenatal Visits; (4) Contents of Nurse's Bag; (5) Advice for Mothers,

on such subjects as diet, sleep, exercise, bathing, constipation, mother's supplies, baby's supplies; (6) Routine of Postnatal Follow-up Work. The pamphlet also contains illustrations of garments and other articles necessary for the baby, as well as model forms on which to keep both the baby's record and the maternity record.



Medical and Health Education in China.—

The formal dedication of Peking Union Medical College, which has been erected and is being maintained by the Rockefeller Foundation, filled the week of September 15-22. The program included clinic sections; sectional meetings in general medicine, general surgery, obstetrics and gynecology, pathology, ophthalmology, otolaryngology and neurology; and papers and addresses by some of the best known medical authorities of the Orient and Occident.

Concerning the work of the Foundation and conditions generally in China, Mr. Edwin R. Embree, secretary of the Rockefeller Foundation, who has recently returned from four months in the Orient, says:

"If anyone doubts the benefits of vaccination and of health regulations in general he should visit such a country as China and see the appalling results of the total lack of scientific attention to public health. Smallpox patients, with the disease in an active state, go freely about the streets, with the natural consequence that the sickness and death-rate from this disease is terrific; typhoid fever, which is being eliminated in the United States by the sanitation of water and milk supplies, is rampant in China; blindness, trachoma, and other diseases of the eye are everywhere in evidence on the city streets; anemia resulting from hookworm and other intestinal parasites seems to be well nigh universal. No one who has not seen the disease, suffering, and death among a people which neglects public health can realize the tremendous advance which has been made in America and Northern Europe through diligent, painstaking and scientific efforts towards disease control.

"The great new medical school in Peking, which has been established by the Rockefeller Foundation as a part of its program of public health and medical education throughout the world, is designed to be a demonstration in medical education and scientific approach to problems of health and disease for the entire

Far East. Its results will be measured not so much by the number of medical practitioners it turns out as by the standards it sets and the quality of the leaders and teachers which it trains for service in other institutions throughout China.

"The faculty of the College and the staff of the hospital have been assembled from America, Canada, and England, and from the increasing number of promising Chinese scientists.

"The buildings, begun in 1917 and completed this summer just in time for the dedication, are sixteen in number, including in the principal group laboratories, hospital wards, an outpatient department, classrooms, an auditorium, a nurses' home, a power plant and accessory structures. The buildings of this modern medical plant, erected on the palace grounds of an old Manchu prince, are in the classic Chinese architecture, brilliant with symbolic painting on woodwork and porches and protected by great green roofs with broad, overhanging eaves. The interiors, however, of both laboratories and wards represent the most modern development in Western building and equipment."

Mr. Embree spoke optimistically of the progress of science in China. "One must expect results to come slowly in so great and so conservative a country," he said, "but the signs of advancement are definite and sure. While the next few years are evidently going to be filled with the greatest difficulties for China politically and economically, if she can make satisfactory progress in science and education there need be no doubt of her future."

In addition to the maintenance of the college and hospital in Peking, Mr. Embree pointed out that the Rockefeller Foundation is assisting thirty-one hospitals and medical institutions throughout Eastern and Central China, and is furnishing fellowships for advanced study in America and England to fifty Chinese and foreign physicians and nurses who are to return for institutional and teaching service in China.

Dr. W. W. Peter, Secretary of the Council on Health Education, Shanghai, China, one of the speakers at the dedication of Peking Union Medical College, in his address on "Methods of Visualizing Modern Health Ideas," stated that the keynote of the educational work which had been presented to approximately 600,000 people had been the demonstrated lecture,

"Some Relations Between National Health and National Strength." He summarized conditions and some of the methods of educational work in China as follows: (1) Before modern health practices will be accepted by the Chinese people who do not understand them, general health education work is of prime necessity. (2) Because the Chinese and foreign conceptions of health subjects differ so widely, special methods have to be devised to interpret modern health ideals to suit the Chinese mind. (3) It has been found of some value to use three dimension moving apparatus built on a large scale with each piece of apparatus designed to visualize one idea. In the demonstration of this apparatus use has been made of well known citizens in the audience. (4) After a general presentation of some of the relations between national health and national strength, a practical program with its special appeal to the local community has been presented.



Conference on Infant Welfare.—The Second English-Speaking Conference on Infant Welfare was held in London, July 5-7, 1921, under the auspices of the National League for Health Maternity and Child Welfare. Six hundred delegates representing twenty-six English-speaking countries were in attendance. The United States Public Health Service, the American Public Health Association, and the American Child Hygiene Association were represented by Dr. Taliaferro Clark, surgeon of the United States Public Health Service.

The Conference was held during the celebration of the National Baby Week, in connection with which an interesting display of exhibits and posters relating to the welfare of mothers and babies had been prepared. This exhibit, together with daily demonstrations on the care of the baby and free consultations and advice on the health of mothers and young children, was available to visiting delegates. In addition, during the Conference, by special arrangement, numerous infant welfare centers, resident institutions for mothers and babies, day nurseries and nursery schools were open for inspection by the delegates.

The question of residential provision for mothers and babies occupied the first day's sessions, the following papers being pre-

sented: Maternity Homes, Dr. Janet Campbell, senior medical officer, Ministry of Health; Provision for Blind Babies, Miss E. Walker Finlay, representing the National Institute for the Blind; Provision for Ailing Children, Dr. C. J. McAlister, honorary physician to the Royal Liverpool County Hospital for Children; The Value of Wards for Ailing Infants, Dr. H. B. Gladstone, medical officer to the Sydenham Babies' Milk Depot, Clinics and Hostel; Provision for Unmarried Mothers and Their Babies, Mrs. Cyril Smithett, representing the National Council for the Unmarried Mother and Her Child; Accommodation for Mothers and Infants under the Poor Law, Miss M. E. Broadbent, manager of the Metropolitan Asylums Board; Some Economic and Administrative Aspects of the Problem of Residential Provision for Mothers and Babies, Miss J. Halford, secretary, National League for Health, Maternity and Child Welfare.

On the second day of the Conference the program was given over to "The Supply of Milk: Its Physiological and Economic Aspects." The following papers were read: The Milk Supply, Nathan Straus, founder of the Infant Milk Depots of the United States; Milk in Its Economic Aspects, Dr. Stenhouse Williams, director, National Institute for Research in Dairying; The Production of Clean Milk from a Producer's Point of View, Mr. F. Arnold Lejeune, manager, Grade A (Certified) Dairy, Lord Raleigh's Dairy Farms; Supply of Milk to Expectant Mothers, Nursing Mothers and Infants, Dr. E. W. Hope, M. O. H. for Liverpool; Sources of Milk for Babies—Maternal Milk and Goats' Milk, Dr. A. Dingwall Fordyce, physician, Royal Liverpool County Hospital for Children; The Physiological Aspect of the Milk Supply, Dr. J. C. Drummond, lecturer in physiology, University College, London; Some Biological Aspects of Milk Feeding, Dr. Harold Waller, medical officer to the Royal College of Saint Katharine.

The final day of the Conference was given over to the discussion of "Inheritance and Environment as Factors in Racial Health." The following papers were given: Inheritance and Environment as Factors in Racial Health, Dr. Helen MacMurchy, chief of the

Child Welfare Division of the Department of Health of Canada; The Influence of Weather Conditions on Mortality and Morbidity in Early Infancy, Dr. Frederick Hoffman, third vice-president and statistician of the Prudential Insurance Company of America; The Antenatal Factors of Life and Death: Genetic, Toxigenetic, Gestational and Obstetric, Dr. C. W. Saleeby, chairman of the National Birth-Rate Commission; Ignorance as a Dominant Factor in Infant Mortality in Poland, Miss McConnell; A Comparison between Working-Class Mothers and Those of the Educated Classes, from the Point of View of Difficulty in Labor and Lactation, Dr. Gordon Ley, gynecologist, Hempstead General Hospital, and assistant obstetric surgeon, City of London Maternity Hospital; Syphilis as an Antenatal Factor in Racial Health, Dr. J. H. Sequeira, physician, Skin Department, London Hospital.

At a special medical session, organized by the Society of Medical Officers of Maternity and Infant Welfare Centers, the subject for discussion was "The Uses and Abuses of Dried Milk."

The Conference gave unmistakable evidence of the realization of the English-speaking people of the necessity and importance of conserving maternal and infant life, and brought out that fundamentally the solution of the problems of child hygiene in other English-speaking countries is the same as in America. A number of the papers indicated that the British Government is more liberal with appropriations for child health work than is the case in the United States, and also that there exists in England a closer coördination than in the United States of the activities of volunteer associations with the activities of official agencies.—Condensed from report by Dr. Taliaferro Clark, Surgeon, U. S. Public Health Service.



Mortality Statistics for 1920.—The Department of Commerce announces that the Census Bureau's annual report on mortality statistics, which will be issued shortly, shows 1,142,578 deaths as having occurred in 1920 within the death registration area of continental United States, representing a death-rate of 13.1 per 1,000 population as compared

with 12.9 in 1919, which was the lowest rate since the registration area was established in 1900.

The death registration area (exclusive of the territory of Hawaii) in 1920, comprised 34 states, the District of Columbia, and 16 registration cities in non-registration states, with a total estimated population on July 1, of 87,486,713, or 82.2 per cent of the estimated population of the United States. The state of Nebraska was added to the registration area in 1920, so that at present the only states not in the area are Alabama, Arizona, Arkansas, Georgia, Idaho, Iowa, Nevada, New Mexico, North Dakota, Oklahoma, South Dakota, Texas, West Virginia, and Wyoming. The figures for the territory of Hawaii will appear in the report, but they are not included in this summary.

The death-rate from pneumonia increased from 123.5 per 100,000 in 1919 to 137.3 in 1920. For chronic diseases of the heart the rate increased from 131.0 to 141.9; for cancer, from 80.5 to 83. Some of the other diseases for which the rate increased are whooping-cough, measles, cerebral hemorrhage, congenital debility and malformations, puerperal fever, scarlet fever, and appendicitis. The fatalities caused by automobile accidents and injuries show an increase from 9.4 per 100,000 in 1919 to 10.4 in 1920.

A marked decrease is shown in the death-rate from tuberculosis, which was 114.2 in 1920, as compared with 125.6 in 1919; also in the death-rate from influenza, which decreased to 71.0 in 1920, from 98.8 the year before. The death-rate from suicide declined from 11.4 in 1919 to 10.2 in 1920. There was a decline also in the rate for typhoid fever and in that for accidental drowning.—*Science*, November 4, 1921, Vol. 54, No. 1401.



New York Cleanest of Large Cities.—The Committee of Fourteen in New York City, in its recently published report for 1920, claims New York has less open vice than any of the world's largest cities. Organized in 1905 to secure the suppression of disorderly hotels, the Committee extended its work in 1912 to include all forms of commercialized vice. It was instrumental

in securing an Injunction and Abatement Law, amendments to the Tenement House Law, and amendments to the Code of Criminal Procedure which made prostitution, regardless of where the offense was committed, a violation of the law.

The report emphasizes the necessity for law enforcement and educational measures in the campaign for civic cleanliness. "Without these," it says, "dispensaries and hospitals to deal with venereal disease must be continued indefinitely, if not increased. While the Committee of Fourteen is a law enforcement organization, it works in the closest coöperation with those in the allied educational and medical activities."

The Committee announces its intention to work in 1921 for new legislation on the following lines: First, a law for the licensing of hotels; second, an amendment to secure a more uniform and satisfactory disposition of cases of males charged with solicitation and procuring; and third, an amendment to the appeal procedure from decisions in the magistrate's courts.

The Women's Court established in 1910 has been a distinct aid in dealing with women charged with sexual offenses, claims the Committee, but no similar court exists to hear cases of men charged with solicitations and procuring. "They are tried in the district courts before magistrates who, as a rule, are without special knowledge of the complex problems of commercialized vice."

In 1918 the General Health Law was amended to include provisions for the examination by the Board of Health of all persons suspected of suffering from venereal diseases, persons convicted of prostitution being declared such suspects. These examinations disclose that about 50 per cent of the prostitutes convicted in the Women's Court are suffering from venereal disease in a contagious stage. "This proportion is low as compared with reports of similar examinations in other cities," reports Frederick H. Whitin, secretary of the Committee, "and is due to its being limited to those in an infectious stage of the disease." The magistrates of the Women's Court are coöperating with the Health Department in disposing of these cases so as to assure adequate treatment of the disease.

The total number of prostitution cases in

the Women's Court has varied greatly in different years, the general tendency being downward. This tendency is shown in the figures for the years 1911-1920, there being 5,365 cases in 1911, as against 1,308 in 1920. Increases in 1914-1915 and 1918 are ascribed by Mr. Whitin to "greater police activity under Commissioner Woods" and to "war conditions" respectively.

The steady decrease over the 10-year period, he continues, "corresponds to the improvement of street conditions and is the result of the amendments which have been secured and the enforcement of law by the police and courts."—*Social Hygiene Bulletin*, May, 1921, 3. (D. G.)



Malnutrition.—Malnutrition is defined as a condition of undernourishment or underweight. The method of detecting malnutrition is by frequent (monthly) weighings, and comparing the results obtained with data in standardized tables giving the weights and height for boys and girls at different ages. Children suffering from malnutrition are usually below normal weight and height, and do not gain as rapidly as they should. Such children are pale, dull, and listless. They have dark rings under the eyes. They tire easily, and have no ambition for work or play. Often they fall behind in their studies. They are nervous, fretful and hard to please. They do not, as a rule, eat with relish or sleep soundly. It is estimated that at least 20% of the school population in the United States is suffering from malnutrition.

Among the most important causes of malnutrition the following are given: 1. Lack of sufficient food. 2. Lack of the right kind of foods. 3. Eating irregularly and between meals. 4. Excess of candy, sweets, pastry, etc. 5. Insufficient mastication. 6. Excessive use of tea and coffee. 7. Insufficient sleep. 8. Habitual constipation. 9. Excessive stimulation and emotional excitement. 10. Long and vigorous playing. 11. Overwork in or out of school. 12. Decayed teeth, enlarged or diseased tonsils. 13. Malaria or hookworm.—Taliaferro Clark, M. D., *Public Health Reports*, April 29, 1921. (M. P. H.)

LEGISLATION—FEDERAL

The JOURNAL reproduces the bi-weekly legislative statements issued by the Washington Office of the National Health Council. Copies of these valuable reports can be obtained every two weeks when they are issued, directly from the National Health Council, 411 Eighteenth Street, Washington, D. C. As Congress was in recess from August 24 to September 21, no further reports could be published until the December issue of the JOURNAL. The present installment contains the substance of Statements Nos. 12, 13, 14.

PROGRESS ON MATTERS PREVIOUSLY CONSIDERED

H. R. 7294. Willis-Campbell Anti-Beer Bill. Immediately upon the convening of the Senate on September 21, after its recess, Senator Sterling moved the consideration of the Conference Report on the Willis-Campbell Anti-beer Bill. On September 22, Senator Stanley began a speech, which consumed two legislative days of the Senate, directed entirely against the adoption of the conference report unless it included his amendment, which would prohibit the search of property without a search warrant. This controversy has no bearing on the question of prohibition of the sale of beer upon a physician's prescription, this feature having the endorsement of both houses of Congress, except to delay passage of the bill. After the completion of the speech of Senator Stanley the Tax Revision (Revenue) Bill and the German Peace Treaty obtained precedence in the Senate and the Anti-beer Bill was, therefore, relegated to an inactive status on the calendar. After numerous efforts, however, Senator Sterling, in charge of the conference report, managed to obtain a tacit understanding with the Senate leaders that the Willis-Campbell Conference Report would be permitted to come to a final vote in the Senate after the completion of action on the Tax Revision measure and the German Peace Treaty.

H. R. 8245. A Bill to Reduce and Equalize Taxation (The Revenue Bill). The Tax Bill, which has already passed the House of Representatives, was favorably reported to the Senate by the Committee on Finance on September 21. This bill, as now before the Senate, contains a number of matters of interest to health workers:

Proprietary Medicines: The Treasury Department recommended a four per cent tax

on the manufacturers of proprietary medicines to take the place of the present one per cent stamp tax on such articles. This four per cent tax would apply to the manufacturers of pills, tonics, liniments, salves and all medicinal preparations and compounds (excepting only serums and antitoxins). This proposal, however, was finally stricken out by the Committee on Finance, and as the bill now stands the existing stamp tax on proprietary medicines will be repealed and no tax of any kind will be made upon such articles.

Toilet Articles: Provision, however, is made in the bill for a four per cent manufacturer's tax on toilet articles, such as tooth and mouth-washes, dentifrices, cosmetics, etc. (Sec. 900, No. 22.) Toilet soaps are taxed 3 per cent (Sec. 900, No. 21).

Exemption for Gifts to Institutions: A proposed amendment, which was earnestly advocated by educational, health and charitable organizations, permitting corporations to have an exemption in their income tax returns on gifts and contributions to charitable and educational institutions, failed to meet the approval of the Senate Committee on Finance. The result of this action of the Committee will limit such exemptions to contributions and gifts by individuals within the taxable year. This exemption will be to the extent of 15 per cent of the individual tax payer's net income.

Health and Accident Insurance Exemption: In defining "Gross Income" (Sec. 213) the bill states that amounts received, through accident or health insurance or under workmen's compensation acts, as compensation for personal injuries or sickness, plus the amount of any damages received whether by suit or agreement on account of such injuries or sickness, shall be exempt from taxation, as not included in the gross income.

Life Insurance Companies Taxed: Domestic and foreign life insurance companies are taxed 15 per cent of their net income (Sec. 243).

Drugs (Opium, coca, etc.): Section 1004 reenacts section 1 of the act concerning opium and coca leaves, approved December 17, 1914, as amended by section 1006 of the Revenue Act of 1918. This act requires physicians, dentists, veterinary surgeons and other practitioners lawfully entitled to distribute these drugs to register and pay a fee of \$3.00 per annum. The drugs must be used only for legitimate medical purposes and a record kept of their use.

Child Labor Taxed: Section 1200 puts a tax of 10 per cent of the entire net profits per annum on any mine, quarry, mill, cannery, workshop, factory, or manufacturing establishment which employs children under sixteen years of age, or where children under fourteen have been employed, or where children between fourteen and sixteen have worked more than eight hours a day or more than six days a week, or after the hours of seven p. m. or before six a. m.

A. 2547. Amendment to Veterans' Bureau Act. Introduced by Senator Robinson, October 5, 1921. Referred to Committee on Finance. This amendment would add a new paragraph to Section 19 of the Veterans' Bureau Act of August 9, 1921. It provides that when a beneficiary has been rated by the Public Health Service or War Risk Insurance Bureau as permanently or totally disabled, or has been or may be rated as temporarily disabled and has been continuously so for six months, as found by competent medical authority, so that he can not successfully follow any gainful occupation, such beneficiary shall be adjudged as totally disabled and entitled to all benefits under the compensation acts.

S. Res. 93. Investigation of Veteran Care. The Senate Committee, headed by Senator Sutherland and including Senators Walsh (Mass.), Calder, Weller, and Pomerene, issued its second report on October 30, 1921 (Report No. 233, part 2). Among specific recommendations were: The appropriation of \$16,400,000 for hospitals; transfer of all government hospitals, including soldier homes not needed by the Army or Navy, to the Veterans' Bureau; creation of a chaplain corps for service in hospitals and training centers; provision of cemeteries at soldiers' hospitals; interment of veteran dead; standardization of training, permitting the applicant to select as far as possible his own vocation; extension of existing insurance to \$10,000 for each policy-holder if he wants it, and extension of insurance and compensation privilege to Americans who served in allied forces.

Cancellation of contracts with state, municipal and private hospitals which were not in existence April 1, 1917, and with all similar institutions which after inspection are found unsuitable was recommended as one administrative reform. Others under this head included issuance of rules and regulations for

the maintenance of order and discipline; frequent and thorough inspection of hospitals and training centers; elimination of politics from appointments; and establishment of additional vocational centers at institutions where mental and tubercular patients are under treatment.

T. D. 3239. Regulations for Medicinal Use of Malt Liquors and Wines. These regulations were issued on October 24, 1921, by D. H. Blair, Commissioner of Internal Revenue of the Treasury Department, with the approval of Secretary Mellon. They had previously been prepared but held up, as it was thought that the Willis-Campbell Anti-Beer Bill (H. R. 7294, S. 2116) (see Statements No. 8, p. 4; No. 9, p. 4; No. 10, p. 8; No. 11, p. 2; No. 12, p. 2) would be finally passed, so that there would be no necessity for these regulations. The bill has passed both branches of Congress, but disagreement has arisen over the conference report, and the bill has been put over until the Senate takes action on the Tax Revision measure.

The first portion of the new regulations deals with the manufacture of intoxicating malt liquors, such as beer, ale, porter, malt extracts and similar fermented malt liquors containing one-half of one per cent or more alcohol. It is required that these liquors can be manufactured for medicinal purposes only by a duly qualified brewer, who must first obtain a permit upon deposit of bond. The liquors can be sold by the brewer only in bottles and closed cases. Another permit must be obtained for the bottling house. The bottles must be adequately labelled and also carry a statement "For medicinal purposes only. Sale or use for other purposes will cause heavy penalties to be inflicted." The case must likewise be labelled.

The requirements for physicians who prescribe such liquor may be summarized in the order they are given, as follows:—

a. Prescriptions for these medicines may be filled only by a licensed pharmacist who is also a retail druggist, or a licensed pharmacist in the employ of a retail druggist. The name of the druggist must appear on the prescription.

b. Prescriptions are not refillable and must be cancelled after use. The regulations declare that a pharmacist should refuse to fill any prescription for liquor if he has any reason to believe that physicians are prescribing for other than medicinal uses, or that a patient is securing through one or more physicians quantities

of intoxicating liquor in excess of the amount necessary for medicinal purposes. Physicians can not prescribe for their own personal use.

c. A label must be affixed to the container of liquor sold on a physician's prescription, giving names of physician, patient, and druggist, kind and quantity of liquor, and directions for use.

d. The right to prescribe distilled spirits, wines and malt liquors for medicinal purposes is confined to such physicians as have obtained permits. Such a physician may prescribe for a person upon whom he is in attendance, if after a physical examination of such person, or if physical examination is impractical, upon the best information obtainable, the physician believes that the internal or external use of such liquor as a medicine by such person is necessary and will afford relief to him from some known ailment.

e. No greater quantity of intoxicating liquor than is necessary for use as a medicine by a person can be prescribed in the treatment of an ailment from which such patient is known by the physician to be suffering.

f. Spirituous liquors are limited to one pint within any ten days' period. Alcohol for external use is limited to one pint for the same person at one time.

g. Two quarts of wine is the limit put upon a single prescription for that beverage, but otherwise the regulations are the same as for beer.

h. The amount of beer a physician may prescribe at one time for the use of the same person is 2½ gallons, but no arbitrary limit is placed upon the number of prescriptions a physician may write or the same person may obtain within a given period.

i. Separate prescriptions shall be used for spirituous liquors, wines and malt liquors.

The only states which do not have laws prohibiting the use of wine and beer as medicines and so are affected by these regulations are Wisconsin, Missouri, California, Connecticut, Massachusetts, New Jersey, New York, Rhode Island, and part of Louisiana and Maryland.

Senator Wadsworth of New York has introduced an amendment to the revenue bill now before the Senate, levying a tax of 60 cents per gallon on beer, \$1.20 per gallon on wine, and \$6.40 a gallon on distilled spirits. The Senator takes the stand that since the sale of these beverages for medicinal purposes is to be per-

mitted under the law, the government should be able to derive a substantial income in the way of taxes upon them.

H. R. 7369. Pollution of Navigable Waters of the United States by Oil or Other Refuse Matter. (Hearings.) On October 29, a hearing was held by the Committee on Rivers and Harbors of the House of Representatives on this measure, which was introduced on June 24, 1921. This bill would make it unlawful to discharge oil or other refuse matter into any navigable waters from any ship or floating craft.

Statements were made by a large number of witnesses that fuel oil and refuse matter are thrown from ships entering New York Harbor and that this fuel oil sinks to a considerable depth in the ocean, is washed up on the Jersey coast, destroys fish in enormous quantities, imperils the oyster and clam industry and pollutes the beaches to such a degree that bathing becomes unsanitary, and that the value of real estate on the northern New Jersey Coast is seriously depreciated. The witnesses included representatives of New Jersey shore and fisheries interests, and of commercial oil and chemical concerns.

H. R. 8783. Forbidding Deposit of Noxious Acids and Acid Materials in Navigable Streams. Introduced by Mr. Rosenbloom of West Virginia, October 20, 1921. Referred to the Committee on Rivers and Harbors. The bill is an amendment to the Rivers and Harbors Act. For the purpose of preserving the public health it forbids the deposit of acid or acid waste or any material which will become acid after being in the water. It is aimed chiefly at the dumping of refuse from active and abandoned mines and factories which are engaged in manufacturing enterprises using acids as products.

H. R. 7746. Regulations for Sale of Milk in the District of Columbia. (Hearings.) Charges that a large portion, if not all, of 7,000 gallons of milk diverted from Washington distributors on October 21, the day on which a milk war was started in the District, was thrown into the sewers by the Maryland-Virginia Milk Producers Association were made by Charles W. Darr and M. E. O'Brien, representing distributors of 65 per cent of the milk consumed in Washington, before a subcommittee of the House District Committee on October 31, 1921.

Mr. Darr told the subcommittee that on ac-

count of the destruction of a large part of this diverted supply of milk the law of supply and demand was not operative to reduce the cost to consumers in the District. The question was raised as to whether the people of the District wanted tuberculin-tested milk as required by regulations of the District health office or whether they would be satisfied with pasteurized milk which the attorney for the distributors said was sufficient in Baltimore, Philadelphia, Harrisburg and other big cities, and which they claimed Dr. Wiley and other scientists had testified was sufficient protection for the consumer. Mr. O'Brien suggested that two standards of milk should be allowed to enter the District market, one tuberculin-tested, for those who are willing to pay the higher price, and pasteurized milk for those who are satisfied that pasteurization is a sufficient protection. In reply to a question from Representative Millspaugh, Mr. O'Brien said he believed that if these two kinds of milk were allowed to come into the District, it would mean a reduction of $2\frac{1}{2}$ to 4 cents a quart on all the milk because he believed the producers in near-by territory who are now members of the Maryland-Virginia Producers Association would be forced to cut the price on their tuberculin-tested milk to meet the open competition.

S. 1588. Prevention of Venereal Diseases in the District of Columbia; S. 1616. Repression of Prostitution in the District of Columbia. Hearings on these two bills were held by the Senate Committee on the District of Columbia on October 13 and again on October 20. S. 1588 requires reporting of venereal diseases to the health officer and provides for measures for their discovery and to prevent their spread. (See Statement No. 2, p. 18, for outline of similar House bill and Statement No. 7, p. 5, for House hearings.) S. 1616 makes it unlawful to maintain houses of ill fame or to engage in or abet prostitution.

On October 13, the witnesses included Chief Justice W. I. McCoy of the Supreme Court of the District of Columbia and Judge R. Hardison of the Police Court, both of whom severely criticized alley conditions in Washington.

Mrs. Mina Van Winkle, lieutenant of the Woman's Bureau of the Police Department, said that during the three years the Woman's Bureau had been in operation it was found that some 3,000 girls, who had been brought in

as offenders against the law, had also offended against sex. She urged the necessity of broader and more stringent laws to enable the authorities to protect these girls and to keep them from becoming prostitutes.

Major R. W. Gessford, Superintendent of Police, said that in the interest of public health, the law should be amended so as to enable the police to take up persons known to be afflicted with venereal diseases and see that they receive treatment.

Dr. Valeria Parker, of the Interdepartmental Social Hygiene Board, urged that action be taken to protect government workers from the results of social crimes.

Bascom Johnson of the American Social Hygiene Association testified that the District of Columbia was far behind the states in the matters of laws controlling offenses against social hygiene.

Other witnesses included the surgeon in charge at Walter Reed Hospital, representatives of the Navy medical corps, the Public Health Service and the District Attorney's office.

On October 20, alley conditions were again criticized by spokesmen for the Emergency Housing Association, including W. D. Mahoney, secretary, and the Reverend J. M. Waldron, colored.

Dr. W. A. White, superintendent of St. Elizabeth's Hospital discussed paresis and social hygiene; Dr. G. M. Kober of the local Social Hygiene Society urged a system of notification; Rev. Father John Cooper discussed the moral phase of the problem.

Other witnesses included David Robinson and F. J. Hepbron of the Public Health Service; Mrs. Howard L. Hodgkins, member of the Board of Education; Mrs. J. A. Griffith, superintendent of the National Training School for Girls, and Mrs. Whitman Cross, representing many local welfare organizations. Dr. Francis Munson spoke on behalf of the local Health Department.

S. 2597. To Improve Alley Conditions in the District of Columbia. Introduced by Senator Ball, October 18, 1921. Referred to Committee on the District of Columbia.

NEW LEGISLATION

(MATTERS NOT PREVIOUSLY CONSIDERED)

H. R. 8527. Amendment of Act Creating Veterans' Bureau. Introduced by Mr. Parks

of Arkansas, October 7, 1921. Referred to the Committee on Interstate and Foreign Commerce. This proposed act is an amendment to the Veterans' Bureau Act, the principal changes from the original law being the extension of full powers to the regional offices of the bureau to hear complaints of ex-service men, award compensations, grant medical, surgical, dental and hospital care, convalescent care and make insurance awards. The bill provides that the action of these regional offices shall be final, except in cases where the claimants are aggrieved. Then only can an appeal be taken to the central office at Washington. The regional offices may also delegate to their sub-offices such powers as they see fit. By the provisions of the bill, a regional office would be established in each state, and sub-offices not to exceed 140 in number.

S. 2458. \$5,000,000 Hospital for Veterans Suffering from Nervous or Mental Diseases. Introduced by Senator Stanley of Kentucky, September 21, 1921. Referred to the Committee on Finance. This measure appropriates \$5,000,000 for the purchase, construction or acquisition by the Director of the Veterans' Bureau of a new hospital to be used for the treatment of ex-service men suffering with nervous or mental diseases. A provision suggests that the proposed hospital be located in the District of Columbia, but this site is not mandatory, so that it is possible to locate the hospital anywhere in the United States. Immediately after the introduction of the bill in the Senate an agitation was started to have the hospital, provided the measure succeeded in passage, placed in the District of Columbia. Director Forbes of the Veterans' Bureau issued a public statement in which he declared that he favored the location of the hospital in the City of Washington or in close proximity to the national capital.

H. R. 8791. Appropriation of \$16,000,000 for Construction of New Hospitals for Veterans. Introduced by Mr. Langley October 21, 1921. Referred to the Committee on Public Buildings and Grounds. After many consultations with Director Forbes of the U. S. Veterans' Bureau, officials of the Treasury Department, and American Legion officers, Representative Langley, chairman of the House Committee on Public Buildings and Grounds, introduced in Congress this measure which, it is claimed, will furnish sufficient hospital facilities for the care and treatment of disabled ex-service men of

the World War for an indefinite time in the future. The bill carries an appropriation of \$16,000,000 to be used for the construction of new hospitals, and the improvement of institutions already owned by the government, the expenditures to be made at the discretion of the Director of the U. S. Veterans' Bureau. A provision in the bill stipulates that \$500,000 of the total sum shall be used for extending the facilities of the U. S. Public Health Service Hospital, Number 32, located in Washington, District of Columbia. This appropriation makes a total of \$34,600,000 appropriated for hospital facilities, the sum of \$18,600,000 being carried in a bill passed at the last session of Congress.

H. Res. 195. Investigation of Consultant Board for Selections of Sites for Hospitals. Introduced by Mr. Fitzgerald of Ohio, October 10, 1921. Referred to the Committee on Rules. This resolution provides for the appointment of five members of the House to investigate at once the actions of the Consultant Board or other assistants appointed by Secretary of the Treasury Mellon for selection, purchase and location of sites for new hospitals and improvement of former hospitals with the \$18,600,000 appropriated by Congress at its last session. All facts in connection with the activities of this Board are included in the questions to be investigated. The members of this Board comprise several leading physicians of the country, selected by Secretary Mellon, including Dr. W. C. White of Pittsburgh, chairman, Dr. Frank Billings of Chicago, Chancellor John G. Bowman of Pittsburgh, and Dr. George H. Kirby of New York. The consultant hospitalization board up to this time has recommended the expenditure of half of the \$18,600,000 on the construction of additions to hospitals already owned by the government.

H. R. 8566. To Recognize and Promote Efficiency of the United States Public Health Service. Introduced by Mr. Dyer, October 10, 1921. Referred to Committee on Interstate and Foreign Commerce. The bill provides that not to exceed five hundred and fifty officers of the Reserve Corps of the Public Health Service, including fifty dental surgeons and fifty scientists other than medical officers, may be transferred to and commissioned in the regular corps of commissioned officers of the Public Health Service by the President and by and with the advice and consent of the Senate in the grades of assis-

tant surgeon, past assistant surgeon, surgeon, senior surgeon, and Assistant Surgeon General. (Hereafter Assistant Surgeon Generals shall be known and designated as medical directors.)

In order to be commissioned or promoted, an examination must be taken as follows: from assistant surgeon to past assistant surgeon after three years' service; from past assistant surgeon to surgeon after twelve years' service; from surgeon to senior surgeon after twenty years' service; from senior surgeon to medical director after twenty-six years' service.

No officer will be transferred from the reserve to the regular list unless he has had at least three years' satisfactory service in the Army, Navy, or Public Health Service, part of that time during the war. Persons not having had such service may only be commissioned as assistant surgeons. The same pay and allowances as previously in force are provided for.

The Surgeon General would be appointed for four years from among the commissioned personnel, who had had not less than twelve years' service, by the President with the consent of the Senate. If the Surgeon General is not re-appointed at the end of his term, he becomes a medical director.

Seven professors in the Hygienic Laboratory are provided by the bill. They may be appointed to any grade below that of Surgeon General. They need not have had previous service, but must pass an examination.

The bill provides that there shall be in the United States Public Health Service a corps of nurses, dietitians, and reconstruction aids. This corps shall consist of (1) one superintendent of nurses, one superintendent of dietitians, one superintendent of reconstruction aids; (2) assistant superintendents of nurses, assistant superintendents of dietitians, assistant superintendents of reconstruction aids; (3) chief nurses, chief dietitians, chief reconstruction aids; (4) assistant chief nurses, assistant chief dietitians, assistant chief reconstruction aids; (5) head nurses, head dietitians, head reconstruction aids; (6) nurses, dietitians, reconstruction aids; (7) student nurses, student dietitians, student reconstruction aids, as from time to time may be needed and prescribed by the Secretary of the Treasury. Original appointments shall be made by the Secretary of the Treasury upon recommenda-

tion of the Surgeon General, under rules prescribed by the Civil Service Commission.

Regulations for Narcotic Drugs. The Commissioner of Internal Revenue has issued under date of October 19, 1921, new regulations for the enforcement of the Harrison narcotic law. These rules permit a physician, acting in accordance with proper medical practice, to prescribe or dispense narcotics for the relief of acute pain or for any acute condition. This may be done without reference to the question of drug addiction. Narcotics may also be prescribed for treatment of incurable diseases, provided (1) the patients are personally attended by the physician, (2) that he regulate the dosage, and (3) that he prescribe no quantity greater than that ordinarily recommended by members of his profession to be sufficient for proper treatment of a given case. Mere drug addiction is not considered as an incurable disease, but those suffering from infirmity or old age, who are confirmed addicts of years' standing and who, in the opinion of the physician, require a minimum amount of narcotics to sustain life may be considered in the incurable class. Ordinary addicts must be treated in accordance with the usual experience of the medical profession. The drug must not be placed in the addict's possession, nor the treatment extend over thirty days for a patient not confined in a proper institution.

H. R. 8794. Discontinuance of the Use of Alleys of District of Columbia for Dwelling Purposes. Introduced by Mr. Focht by request of District Commissioners, October 21, 1921, and referred to the Committee on the District of Columbia.

S. 2601. Introduced by Senator Myers, October 14, 1921, and referred to the Committee on the District of Columbia.

These two measures, both designed to prevent the use of the alleys of the District of Columbia in order to safeguard the public health, were presented to Congress after a similar measure had been already introduced by Senator Ball (S. 2597). All are amendments to acts already on the Statute Books dealing with public health of the City of Washington, D. C.

Quarantine of Live Stock. In order to prevent the spread of rinderpest, surra, foot and mouth disease, contagious pleuro-pneumonia and other animal diseases, many of which are dangerous to man, the Department of Agri-

culture now requires that anyone who wishes to import cattle, sheep, goats, swine, or other animals from any country, except Canada or Mexico, must first obtain from the Secretary of Agriculture a permit, to be presented to the American consul at the port from which the animals will be shipped. No permits are issued for shipment from countries where these diseases are prevalent.



STATE HEALTH NOTES— GENERAL

Illinois.—In view of the fact that Illinois now stands alone among Northern states east of the Mississippi that have not qualified for the United States Birth Registration Area, the State Department of Public Health is planning to carry out a drive for securing complete birth reports. To this end Director of Public Health Rawlings recently held a conference with the State Registrar of Vital Statistics and an official from the Federal Bureau of the Census to outline a campaign. From information reviewed at this conference it appears that twenty-nine counties out of the 102 in the state, and fifteen of the more populous cities are now largely responsible for the delayed and incomplete reports that keep Illinois ineligible for the Area. The best of these counties and cities are 20 per cent deficient in their birth reports, while the worst are more than 40 per cent deficient. In the campaign every possible means will be employed to obtain the coöperation of physicians and others in securing prompt and complete reports, but when these methods fail to bring results the offenders against the law will be prosecuted.

The popularity of the health exhibits owned by the State Department of Public Health continues to find expression in requests for their use in connection with prominent events throughout Illinois. Since July 1 they have been displayed at the "Pageant of Progress" in Chicago, the State Fair in Springfield, and at eight county and local fairs. In addition to this, a special exhibition was given at the University of Urbana in connection with the annual meetings of the Better Community Conference, the Illinois Tuberculosis Association and the State Library Association, and at Rockford in connection with a local "Pageant of Progress." It is estimated that a total of

between two and three million people saw the exhibits on these occasions.



Indiana.—The Indiana State Board of Health instituted a new division of the Board October 1, known as the Housing Division. The director is W. F. Sharpe, an architect of reputation. He is assisted by Albert E. Wert, who has had experience in housing work in New York City. This is the fourteenth division attached to the Indiana State Board of Health. Tenement house surveys will be made in the large cities as rapidly as possible and exact conditions reported. All plans and specifications made by architects for hotels, lodging houses and tenements must be submitted to the State Board of Health for approval.



Michigan.—According to records of the State Department of Health, the average length of life in Michigan in 1872 was 24.1 years, while the average length of life now is approximately 41.6 years—a gain of 17.5 years. In 1872, 42 per cent of all deaths occurred among children less than five years of age, and 50 per cent of all deaths occurred before the age of 14. In 1919 only 23 per cent of the total number of deaths was among children under five, and 50 per cent of the total was not reached before the age of 42.

One divorce for every six marriages is Michigan's matrimonial story for the years 1918 and 1919, as recorded by the Division of Vital Statistics of the State Department of Health.



New York.—The Teachers Union of New York City is making a study of physical conditions in New York City schools based upon reports by members in 61 school buildings. The study is not being made to discredit any municipal or educational official, or to promote the political interests of any individual. The Union is not a political organization, and is interested merely in raising the standards of civic life in the particular branch of work in which the members give their service. Reports are to be published on cleanliness, drinking water and lunch rooms, noise, ventilation and heating, lighting, general conditions, and recommendations for improvement.

Oklahoma.—The accompanying cut, reprinted from the *Oklahoma News* of August 13, 1921, is one of a series of advertisements dedicated by the First National Bank of Oklahoma City to civic organizations doing a real service for the community. In its attitude on the problem of good health and its tribute to the work of the Oklahoma Public Health Association the advertisement is both unusual and gratifying.

To the
**OKLAHOMA PUBLIC
HEALTH ASSOCIATION**

One of the greatest assets of an individual, city or nation is health. If a man has health he also has happiness and prosperity, for those two precious possessions depend very largely upon his physical condition. The sick man is only partly efficient, and almost wholly miserable.


**The Modern Health
Crusade**

Here is a tribute to you, then, for the work you are doing in promoting health in Oklahoma. You deserve a compliment for the aggressive manner in which you are waging war on tuberculosis and other diseases.

We like also the Modern Health Crusade which you have instituted among the public schools of the state. By teaching the principles of hygiene and sanitation to children you are striking a blow at misery among the next generation.

Insofar as you are eliminating disease, you are promoting the welfare not only of the individual, but of the community as a whole. The First National Bank wishes you continued success.

One of a series of advertisements dedicated to Oklahoma City Civic Organizations in recognition of their unselfish services to the community.



1889 1921

OLDEST STRONGEST

**FIRST
NATIONAL BANK**
OKLAHOMA CITY

Minnesota.—A series of public-health meetings was held at the University of Minnesota, Minneapolis, on November 3, 4, and 5, under the auspices of the State Sanitary Conference, and a number of allied organizations.

The Minnesota State Sanitary Conference has in the past been limited largely to medical health officers who met at the call of the State Board of Health in accordance with the provision of law providing for such an annual conference. This year a combined meeting was arranged which included voluntary organizations and all state departments which are in any way concerned with public-health problems. Both the nature of the program, the attendance and the interest manifested by all of the groups concerned, indicate that this meeting was the most important conference on public health that has ever been held in Minnesota.

The agencies participating included: United States Public Health Service, American Red Cross, University of Minnesota, State Board of Health, State Board of Control, State Advisory Commission for Tuberculosis, State Dairy and Food Department, State Live Stock Sanitary Board, State Sanitary Conference, Minnesota Public Health Association, and American Waterworks Association.



Wisconsin.—Dr. H. B. Sears of Beaver Dam has been appointed deputy state health officer for the Northwest Wisconsin District, with headquarters at Eau Claire. He succeeds Dr. V. A. Gudex, who has been assigned to the state office in Madison for work in the Bureau of Communicable Diseases.

Miss Theta C. Mead of Merrill has been named as a state supervising nurse under the Bureau of Child Welfare and Public Health Nursing of the State Board of Health, for duty in the northern half of the state. Miss Mead was formerly county nurse for Lincoln County, and for a time was supervisor of public-health nurses in Hennepin County, Minnesota. The southern half of the state will be covered by Miss Nellie Van Kooy, the first supervising nurse.

As a cause of death, cancer outstripped all other causes of death in Wisconsin in the third quarter of 1921, with 630 such deaths reported. The death-rate for the state remained at 10 per 1,000 population. Wisconsin's cancer mortality during 1920 was slightly higher than the Registration Area's, being 84.9 as compared with 83 for the Area. In tuberculosis mortality the Area had a rate of 114.2, while Wisconsin's was down to 84.2.

INDUSTRIAL HYGIENE AND OCCUPATIONAL DISEASE

Abstracted by DRs. E. R. HAYHURST and E. B. STARR.

Skin Diseases Among Printers.—The investigator reviews the literature in brief on this subject. The scope of his own investigations covered the methods of plate printing, the process in which the dermatosis occurs, the materials used, the methods employed in removing the inks, physical examination of workers, analyses of inks, oils and soaps, and experimental work on volunteers. The conclusions are as follows: the inks themselves do not cause the trouble, although they delayed healing when applied after an abrasion of the skin. The brown and green inks delayed healing longest, and the black for the shortest time.

All inks, irrespective of color, when removed by the methods in vogue at the plant at the time of this study caused an irritation, and in one case a dermatitis, among those with dry skin.

The degree of dermatosis apparently depends upon the dryness of the skin, the amount of linseed oil in the ink, and the method of removing the ink. It is believed that the reason why some men develop the condition in a short time and others after a long period of time lies in the degree of natural oiliness in the skin of the individual. Again, with those who use the black ink, which has the largest proportion of oil of all the inks, the trouble is further delayed. It may be that the drier in the inks has a tendency to extract the oil from the skin of some individuals. Those who do not wear gloves when cleaning the plates with benzol may more readily acquire a dryness of the skin. The dry skin might be compared with a blotter, which very readily absorbs the oil in the inks and the pigments which are carried with the oil. These pigments, in turn, are obviously removed from a dry skin with more difficulty than they are from a skin which is already oily and which absorbs little or no additional oil from the inks. More scrubbing is required in the case of the dry skin, and a dermatitis soon begins. The inks retard healing, and from repeating the process daily a severe case of eczema may develop.

The oil supplied by the plant in no way contributed to nor influenced the dermatosis.

The prophylactic measures recommended, if used constantly and under supervision, will prevent the dermatosis.

The skin lesions respond readily to the treatment with calamine paint.

Preventive Measures Recommended. A supply of lanolin and olive oil in equal parts should be placed in suitable receptacles in the wash-room where the printers and those who handle the inks change their street clothes for work clothes. Before entering the press rooms, each worker should be required to rub lanolin well into the pores of the hands and arms. If the skin feels too greasy after this application, the excess may be wiped off with a clean cloth. At the luncheon period these workers should be supplied with a mixture of sawdust and liquid soap (the sawdust should be moistened with the soap), which, together with warm water, will readily remove the ink without injury to the skin. It is optional with the men to precede the sawdust and soap with the oil supplied by the plant. Before entering the press rooms, the first process described above should be repeated; and at the end of the shift, the second, or cleansing, process should be repeated. The foremen in these rooms should be responsible for their helpers carrying out the preventive measures.

Treatment. As soon as the foreman notices an incipient eruption on the hands or arms of any worker in his department, he should insist that the worker report to the medical officer, who will furnish him with the compound referred to above, and instructions for its issue.—William J. McConnell, *Public Health Reports*, Vol. 36, No. 18, May 6, 1921, pp. 979-989.



Lengthening Life Through Insurance Health Work.—A study of the trends of mortality among policyholders in the Metropolitan Life Insurance Company and in the United States Registration Area, 1911 to

1919, shows the general decline in mortality as computed from the census and a still greater decline among policyholders, the downward tendency among policyholders being nearly twice that of the population in the Registration Area. The year 1918 is omitted in both compilations because of the influence of the influenza epidemic. It is estimated for tuberculosis of the lungs that a saving of 11,000 lives among policyholders resulted in 1920 by a decline in death-rate since 1911, a figure three times as great as in the population area. For organic diseases of the heart the general population trend has been upward, while that of the insurance group has been decidedly downward (36,000 fewer deaths than if the 1911 death-rate had prevailed). For Bright's disease the general trend has been slightly downward, while that of the insured group has been decidedly so (34,000 fewer deaths than if the 1911 death rate had prevailed). For accidents the trend has been downward for both groups (26,000 fewer deaths than if the 1911 death rate had prevailed). For cancer the incidence in the general population has increased from 74.4 to 80.5, while the insured group has remained practically stationary at 68 per hundred thousand. For typhoid fever the decline has been remarkable in both groups (from approximately 20 to less than 10 per hundred thousand). Typhoid fever is a vanishing cause of death. There were 2,200 fewer deaths among policyholders than if the 1911 death-rate had prevailed. The results of other studies are shown for communicable diseases in children and for the puerperal state. The Company's campaign to prolong life has followed four main lines: (1) education of policyholders in personal hygiene; (2) organization of Visiting Nurse Service; (3) development of an Industrial Health Service Bureau to coöperate with employers in securing better working and living conditions for their work people; (4) coöperation with health and other officials of states and cities. Measured in terms of lives the saving during these years has been 38,000 lives; measured in terms of dollars and cents, \$7,530,000 in death claims. The concurrent saving in the Registration Area for the same years has been 17,800 lives and \$3,451,000 in death claims.—*Metropolitan Life Insurance Co.*, 10-page pamphlet, 1921.

Health Problems in Industry.—At a conference of practitioners in industrial medicine, called by the Industrial Welfare Society at Westminster on June 2, Prof. E. L. Collis stated that in 1913 they could only muster about twenty welfare supervisors at a conference at York. There was no reason why medical service in factories should not grow equally rapidly, but propaganda work among employers was necessary. Medicine could save industry millions a year by preventing breakdowns and lost time, by finding workers jobs suited to their health, and by making conditions more healthy for the workers. Miners' nystagmus, lead poisoning, anthrax, and phosphorous poisoning were comparative rarities; the things to be prevented were bronchitis and phthisis. The question is what is the best way of convincing industry of its needs.—*Lancet* (London), Vol. CC, No. 5,102, June 11, 1921.



Importance of Industrial Medicine to the Community.—Professor Collis read a paper on this subject before the Section of Preventive Medicine of the British Medical Association. The study of health of the industrial part of the community is the first thing to be ascertained. Different types of data are at hand. First come the disclosures of the Army-recruiting examinations. Here only 36 per cent of the male adults of age to bear arms were classed as grade one. Next, appeal may be made to mortality statistics. Here we find the agricultural laborer with a comparative mortality figure of 470. A standard set by the insufficiently paid and poorly housed agriculturist who works long hours is surely not too high to aim at. Yet the comparative mortality for printers is 773; for tailors, 799; for cotton operatives, 811; for shoemakers, 820; for iron and steel manufacturers, 837; for Lancashire coal-miners, 941; for edged tool-makers, 1,010; for costermongers, 1,507; and for general laborers, 2,301. Third, age distribution gives us some information. The number aged 55 and over, out of 1,000 occupied agriculturists, is 225; out of 1,000 cotton operatives, 69; out of 1,000 printers, 66; out of 1,000 coal-miners, 75; out of 1,000 metal workers, 98; and in the building trades, 121. There is, then, a wide field of work before industrial medicine to establish the

why and wherefore of these differences. The scope of work has enlarged much beyond the boundaries of occupational disease, but the guide-post is the same. To-day industrial medicine is recognized to be directly aimed at preventing disease and maintaining health. The inclination to associate the subject of industrial medicine only with occupational diseases is unfortunate. It is true they are important in drawing public attention and they have established a guide-post of industrial hygiene. The tendency in the past has been to shift the burden of responsibility onto some insurance agency; but the latest compensation scheme under the Workmen's Compensation (Silicosis) Act, 1918, places upon industry—the refractory industry in this case—the responsibility of shouldering its own insurance. Action on these lines will probably prove a direct incentive to industry to lighten the liability by actively pursuing preventive measures.

A labor turnover of the 20,000,000 industrial persons of 100 per cent at £5 per head comes to £100,000,000 a year. This high labor turnover is unnecessary, as has been shown both in the United States and Great Britain. It falls to 30 per cent where medical supervision of entrants and hygienic conditions of employment exist. This would mean a saving of £70,000,000 a year. It has been established by careful inquiry that the underlying cause at the back of lost time is either certificated sickness or that condition of lowered health which precedes sickness. Various estimates of lost time have been made. The loss of 4 per cent means 80 hours, which comes to £4. Ten million persons at £10 means £100,000,000. Ten millions at £4 means £40,000,000. The difference, £60,000,000, represents what may be easily attained by medical supervision in industry. On these two items alone there is a possible saving of £130,000,000 a year. Convalescence can be expedited both mentally and physically by graduated activity of an interesting nature, and the best form of interest is remuneration for work done, which is to-day precisely the form of activity prohibited for the industrial convalescent. The result is that to-day enormous sums of money, which there are no means for estimating accurately, are expended in retarding convalescence. The proposition is put forward that industrial medicine properly ap-

plied can effect a saving each year on labor turnover of from £60,000,000 to £70,000,000; on lost time of £50,000,000 to £60,000,000; and through industrial convalescence of many millions more.

The trend of thought to-day is against nationalization of industries, but industries must realize that while maintaining their independence they take over at the same time certain responsibilities in regard to those employed which under nationalization would be undertaken by the state. Full recognition of these responsibilities would entrench the position of industrial independence. Failure in this matter, quite apart from economic waste, must sooner or later cause those employed to demand reconstruction of modern industrial organization. In very truth the community to-day greatly needs an industrial medical service; it needs it in the interests of health; it needs it in the interests of economy; it needs it in the interests of industrial efficiency; it needs it in the interests of social contentment.—E. L. Collis, *Lancet*, Sept. 3, 1921, pp. 487-89.



Blood Pressure in Lead Poisoning.—The absence of high incidence of diseases of a type which might be attributable to lead, namely, those in the alimentary and nervous sections, together with the high incidence in the respiratory type, is a little difficult to reconcile with the supposedly high incidence of lead poisoning among painters as a whole, as it would seem that if lead poisoning were a serious feature in the painting trade it should show in a block of figures of this type.

In a recent examination of white lead workers and painters the average blood pressure of the painters in the same age-groups was found to be higher than that of lead workers. This is a suggestive point; the constant inhalation of vapors of volatile fluids, among which are compounds of the benzene and paraffin series, is conducive to renal affection and high arterial tension. The higher arterial tension of painters is the more striking in that painter's work is much less severe, less muscular effort being required in using a paint-brush than in carrying half-hundred-weights of lead or huge baskets filled with wet tan.

One further statistical fact, culled from the 1911 figures of the Registrar-General's re-

port, appears to corroborate the growing opinion that it is in the volatile portions of the paint rather than in its solid constituents that one must look for the cause of the disease. The birth-rate tables per 1,000 males aged under 55 years gives a birth-rate per 1,000 for the painters as 155, being actually higher than that of clergymen, barristers, solicitors, law clerks, farmers, and graziers (148), while the figure for all males is 162. Such figures do not suggest severe lead absorption.—Sir Kenneth Goadby, *Lancet* (London), Sept. 3, 1921, pp. 489-491.



Effect of Health Legislation on the Health of the People.—Capt. Walter E. Elliot: He began his remarks by saying that he was more than ever impressed with the value of prevention as against cure, and it appeared that prevention could only be secured by statutory compulsion. Medical skill in treatment had not advanced in the same degree as legislation, and he attributed the remarkable decline in infantile mortality and in the deaths from infectious disease largely to Parliamentary action. The expectation of life among individuals of the community had increased by over ten years during the last half century, and that increase was entirely at the useful period of life, for the man of 70 to-day had still the same expectation as a man of the same age 50 years ago.

Important excerpts from the discussion which followed are given.

Dr. Dearden: "In addition, the factory door must be opened to the general practitioner, who cannot give the service he is capable of unless he is acquainted with the industrial risks of his district. Arlidge in the past, and Prosser White to-day, are instances of the value of the general practitioner."

Dr. W. Duncan considered that the whole question of industrial medicine was one of the general practitioner. His interest is direct, for the healthier the panel patients are, the less work there is for the panel doctor. He must acquaint himself with the district industries by personal inspection. He must approach employers and get the good-will of the workers.

Sir T. Oliver was in agreement with extended use of the general practitioner, who to-day does not visit his patients while they

are at work, and is not acquainted with their occupational risks. The results are often unfortunate, as he accepts without demur the statements as to causation of illness made by the patient. These are frequently misleading, as when a post-mortem on a painter certified to have lead colic revealed the presence of a ruptured gastric ulcer.

Dr. D. W. Inglis was not convinced that the factory door was so closely barred and slammed as had been represented. This opinion was oftener held by those who had not troubled to push against the door, which nearly always gave way if the handle was turned by a combination of tact and bluff. Most factories provided facilities which could advantageously be used as sanatoriums for those convalescing from occupational risks, such as lead poisoning. He urged the need of greater knowledge in the profession of the work of the worker.—Annual Meeting British Med. Assn., Section Preventive Medicine with Industrial Diseases, *Lancet* (London), Sept. 3, 1921, pp. 500-502.



Tests for Respiratory Efficiency.—Continuing the Milroy Lecture, Dr. Flack showed that out of some ten possible tests for respiratory efficiency, the following tests came into routine use in the Royal Air Force, as affording information of value: (1) vital capacity; (2) holding the breath; (3) expiratory force; and (4) sustaining 40 mm. mercury (endurance or fatigue test). The article discusses the minutiae of these tests and those interested should read the original.—Martin Flack, Milroy Lecture, *Lancet* (London), Sept. 24, 1921, pp. 637-641.



Confusion of Wood-Alcohol Poisoning With Diabetes.—An editorial in the *Lancet* for September 17, 1921, page 618, calls attention to Ziegler's paper in the *British Journal of Ophthalmology*. A point worth noting is that the end-product excreted by the kidneys is formic acid and that this reduces Fehling's solution, so that a wrong diagnosis of diabetes is quite possible.



Discussion on Sepsis in Minor Wounds.—This subject was taken up by the Transvaal Mine Medical Officers' Association, Dr. H. T. Butt, president, in the chair. The conditions at Randfontein are rather different

from those found in any other mine on the reef, except the E. R. P. M., from the fact that it is so large. It extended over seven miles, and in that seven miles 15,000 boys were distributed into six compounds. Therefore it was nearly impossible to centralize as much as one would wish to. There were nearly 1,000 beds in hospitals, and about 800 boys per month who were suffering from accidents were admitted. Apart from that, there were something like 1,000 dressings per day, and sometimes 1,200 done in the compounds. Dr. Butt was more than ever convinced that the primary infection occurred at the seat of the accident and at the time of the accident. He felt that more attention should be given to treatment of the original wounds of the natives, particularly to the small wounds, which often gave as much trouble as any other. And in the treatment of the small wounds of the native he wished to emphasize the extreme importance of the training of the underground native boy. He had always been a little disappointed in so-called "first-aid men" (Europeans). A "first-aid" man often obtained only a superficial knowledge at a course of lectures, and while of value in serious accidents, whether to European or native, if he happened to be on the ground, was of no value whatever in treating the small mine wounds of the underground native, because he did not take the slightest interest in the native. Neither was he interested in a case in which a wound was being dressed by any boss boy. This seemed to Dr. Butt to be a great failing in European first-aid men. These men were specialists when they had big accidents, but they were useless for prevention of sepsis. The system that he had endeavored to start, and which was running more or less satisfactorily, was that the boss boys who had been trained, or were about to be trained, were carrying the usual first-aid box, which was given to them when they went on shift and put into the compound when they came off shift, when it was replenished. Once dressed in the compound a boy could not escape, because his number was taken, a record was kept in the dressing-room of the compound, and if he did not appear the next day he was sought for. A recent count of wounds dressed in the compounds showed the number to be 1,429 per day. In treating a wound, the

skin had been painted with iodine and the wound swabbed with it. With another iodine swab the wound had been painted and thoroughly cleaned. By this means the wound had a clear and clean area around it and a more or less iodized coating. The dressing—white precipitate ointment, half-strength of B. P.—was next applied. That was spread on lint and placed on the wound after it was iodized. No other treatment was given. Dr. Butt felt that this treatment had been astonishingly successful. It seemed to keep out water and dirt to a large extent, and, moreover, was very cheap. Dr. Butt stressed the necessity of efficient nursing, whether male or female. Although when he first started he was a supporter of European female nursing, since he had managed to collect European males together—he might have been luckier than others—he had been astonished at what they could do when they tried. He had a superintendent whom some of them knew, who had opened his eyes as to what a qualified man could do in nursing. Dr. Butt felt that the root of the whole matter was to treat wounds as septic until they had proved that they were not, and also to see that nursing of major cases was done by Europeans. Dr. Butt wished it understood that his remarks were simply from his own experience, and were not to be construed as in any way a criticism of anyone who had preceded him.

Dr. Watkins said that in regard to sepsis he would like to give a suggestion which came from no medical man at all. He happened to be in Egypt at the time that the Assouan Dam was being built by the late Sir John Aird. In connection with this piece of construction there was an enormous number of shin accidents, the remedy for which came entirely from the Indian overseer. There was nothing in the Tropics like the sepsis that there was here, but it was of a different character. The system adopted at Assouan was this: The Indian overseer used to boil castor oil, as he said, "to kill anything that was bad in it." Then he made a 1 per cent solution of mercury in oil, and in that was soaked plain white lint. He found that it was a mistake to use the absorbent wool given him by a Scotch doctor, and therefore bought non-absorbent wool, which surrounded the little pads of mercurialized castor oil, and acted as a waterproof dressing to the wounds.

The Pregnant Woman in Industry.—The authors summarize as follows:

1. The pregnant woman is better off in the normal home environment than at work in a factory.

2. With proper supervision, however, it will not be harmful for the normal pregnant woman to work, if work is an economic necessity for her.

3. All pregnant working women should receive careful medical and vocational supervision.

4. The abnormal pregnant woman should discontinue work, and should resume it only on the advice of a competent physician.

5. The pregnant woman is an increased accident risk for the manufacturer. By means of careful supervision, however, this risk may be reduced to a minimum.

6. Any occupation that is harmful to the general woman worker is of greater harm to the pregnant worker.

7. The following types of occupations are harmful: (a) continuous sitting; (b) continuous standing; (c) repeated lifting, reaching, stretching; (d) jolting; (e) any work requiring new muscle adaptations.

8. Certain specific occupations are distinctly harmful to pregnancy and to child-bearing functions. Lead trades constitute the outstanding example of this group.—C. P. McCord and Dorothy K. Minster, *Jour. of Indus. Hygiene*, June, 1921, Vol. III, No. 2, p. 50.



Mask for Firemen.—That a fireman's mask which will protect against all forms of smoke and chemical fumes will soon be commercially available as the result of the work of Government chemists is indicated in Technical Paper 248, "Gas masks for Gases met in Fighting Fires," by A. C. Fieldner, Sidney H. Katz, and Selwyne P. Kinney, just issued by the United States Bureau of Mines.

That the army mask gives excellent protection against smoke and the irritating and distasteful products of combustion, but will not protect against carbon monoxide atmospheres deficient in oxygen or atmospheres containing ammonia gas, is asserted by the authors. City firemen have been

overcome while wearing army gas masks for fighting fires. Gas masks of the army type should not be used in mines after fires and explosions. Self-contained oxygen breathing apparatus should be used on such occasions.

The Bureau of Mines has tested and used many types of self-contained oxygen breathing apparatus in fighting mine fires and in rescuing miners trapped in poisonous gases resulting from fires or from explosions in mines. Similar devices have been used by city fire fighters but have never been considered entirely satisfactory, owing, largely, to their weight, to the time necessary for adjusting them to wearers, and the constant care required to maintain the apparatus in good working condition. Hence there has long been need for a light, easily adjusted, and dependable breathing apparatus for protecting fire fighters from irritating and poisonous gases and smokes.

As a result of the war the gas mask, which uses a chemical filter for removing poisonous gases and fumes from air, has been developed to a high state of perfection. The mask used by the United States Army is capable of giving complete protection against all the deadly gases that have been met on the battlefield, but it does not protect against all the gases or atmospheres encountered in mines and in the industries and in fire fighting.

Notwithstanding this fact city officials and mine superintendents have been circularized by firms offering army masks with statements that they will protect the wearer in conflagrations and in mines. The untruth of such statements has been one reason for the present paper and for previous statements concerning the inefficiency of army masks under conditions other than those of the battlefield.

Copies of Technical Paper No. 248 may be obtained from the Director of the Bureau of Mines, Washington, D. C.

An Example

The clock sets an example
To many a man in town;
It never fails to take a rest
Whenever it's run down.

—*Boston Transcript*.

PUBLIC HEALTH LABORATORY NOTES

Abstracted by ARTHUR LEDERER, M. D.

Comparison of Formol and Wassermann Reactions in Diagnosis of Syphilis.—Of the total number of positive reactions obtained by the formol reactions of Gaté and Papacostas, only 37 per cent agreed with the positive results obtained by the Wassermann method. A large number of formol positives (44 or 8.8 per cent of total) were of the single plus type, and of these 13 (or 29.5 per cent) were positive by the Wassermann method. These weakly positive reactions tend to induce confusion, as it is often difficult to interpret these reactions. The reaction as it stands is of no diagnostic value because of its failure to react in clinically and serologically clear-cut cases of syphilis, and the occurrence of positive reactions in the absence of the disease.—Enrique E. Ecker, *Jour. Inf. Dis.*, 29, 359 (1921).



Immunologic Comparison of Saline and Lipoid Typhoid Vaccines.—The antigenic properties of typhoid lipovaccine in rabbits are not equal to those of saline vaccine. No agglutinins or fixation antibodies appear in the serums of those vaccinated with lipovaccine, while in those vaccinated with saline vaccine the mean agglutination titer is 1 to 160. Animals vaccinated with lipovaccine, whose serums show no agglutinin contents, are nearly as well protected against becoming carriers as those vaccinated with saline vaccine whose serums show high agglutinin contents. Even in the latter animals, the agglutinin contents varies in the degree inversely with the protection afforded. Therefore, the agglutinin titer is certainly not a measure of protection.—Jeannette N. Gay, *Jour. Inf. Dis.*, 29, 417 (1921).



A New Method for the Staining of Bacterial Flagella.—The stain is prepared as follows:

Tannic acid	10	gms.
Aluminum chloride (hydrated)...	18	gms.
Zinc chloride	10	gms.

Rosaniline hydrochloride	1.5	gms.
Alcohol 60 per cent.....	40	cc.

The solids are placed together in a mortar and at once triturated with the alcohol. Ten cc. of alcohol are used first and the mass is mixed thoroughly, care being taken to smash up the whole of the zinc chloride; the rest of the alcohol is then stirred slowly, when the mass goes gradually into a viscous solution of deep red color. In this state the stain appears to remain stable for several years. The slides used must be scrupulously clean. The method of applying the stain is given in detail.—H. G. Plimmer and S. G. Paine, *Jour. Path. Bac.*, 24, 286 (1921).



Observations on the Wassermann Test Using Ice-Box Fixation.—It appears that the chief value of the cold fixation technic employed in this investigation is as a test of cure in well-treated cases. The possible occurrence of a slight degree of non-specific fixation must, however, always be borne in mind.—E. J. Wyler, *Jour. Path. Bact.*, 24, 349 (1921).



Bacteria on Subsidiary Coins and Currency.—There seems to be little basis for the belief that coins bear any close relation to the spread of disease. The indicators of pollution used in sanitary investigations were entirely absent in the coins used in this investigation. Thirty-seven of the strains of micro-organisms isolated from the coins were spore-formers, and probably spores are necessary before the organism may perpetuate itself for any considerable length of time on coins. This may explain why none of the commonly accepted indicators of pollution were found. *B. anthracis* was able to live for eight days on pennies and seventy-one days on nickels, when the experiment ended. The greatest factor tending to control the types and numbers of micro-organisms on coins seems to be the metal of which the coins are made.—Charlotte B. Ward and Fred W. Tanner, *Am. Jour. Med. Sciences*, 162, 585 (1921).

Case of Meningitis in an Infant Due to a Thread-Like Diphtheroid Organism.—A diphtheroid micro-organism named *Corynebacterium trichodiphtheroide* was isolated as the causative agent in the case of purulent meningitis developing in an infant suffering with bronchopneumonia. It appeared as a small bacillus in the spinal fluid, grew into irregular thread-like forms on first culturing, later becoming bacillary with Gram-positive polar bodies and segments of diphtheroid type. It was not pathogenic for rabbits or cavies.—Milo K. Miller and M. W. Lyon, Jr., *Am. Jour. Med. Sciences*, 162, 593 (1921).



Determination of the Basal Metabolism From the Carbon Dioxide Elimination.—A method is proposed whereby the carbon dioxide elimination may be used as an index of basal metabolism. The apparatus is stable, simple and relatively inexpensive. The carbon dioxide elimination seems to be at least as accurate and possibly a more accurate index to heat production than is oxygen consumption.—John T. King, Jr., *Bull. Johns Hopkins Hosp.*, 32, 277 (1921).



Deviation of Complement Test for Tuberculosis.—The author has been studying at the Pasteur Institute at Paris the reaction of fixation with Besredka's new antigen in diagnosis of tuberculosis. This test is proving valuable in revealing cases in which bacteriologic examination is still negative. A positive reaction often precedes all other manifestations of tuberculosis. The findings with the intradermal auto-urine test invariably coincided with those of the deviation of complement test.—A. Grumbach, *Schweiz. Med. Wochenschrift*, 51, 831 (1921); *Jour. A. M. A.*, 77, 1373 (1921).



The Gram Stain in the Diagnosis of Chronic Gonorrhea.—Make thin films, air dry, stain unfixed or use very little heat in fixing. Flood slide with anilin gentian violet or a 1 per cent aqueous solution of methyl violet. Thoroughly mix with the dye on the slide a few drops, 3 to 8, depending on the amount of dye, of a 5 per cent solution of sodium bicarbonate. Allow to stand for two or three minutes. Flush off the excess stain with the iodine solution, cover with

fresh iodine solution and allow to stand one minute or longer. Wash in water as long as necessary and blot off all free water until the surface of the film is practically free of water, but do not allow the film to become dry. The success of the stain depends largely on the proper control of this step. Decolorize with acetone or acetone and ether (1 part of ether to from 1 to 3 parts of acetone) until the acetone flows from the slide practically uncolored. This usually requires less than ten seconds. The acetone should be placed on the slide; the slide should not be dipped in the decolorizer. Blot dry. The slide quickly dries without blotting. Counterstain for five or ten seconds with a 2 per cent aqueous solution of safranin O. Exposure to the counterstain can be increased, depending on the excellence of the violet dye used. Wash off excess stain by short exposure to water, blot and dry. Immerse in xylene or turpentine for several minutes or until clear. Examine.

The addition of sodium bicarbonate increases the value of the Gram stain as an aid in the diagnosis of chronic gonococcal infection. It does this in two ways: (a) it results in a heavier concentration of the violet dye remaining in the gram-positive organisms; (b) it causes some of the gram-positive organisms which would otherwise appear gram-negative to retain the violet dye. Sodium bicarbonate does not cause the gram-negative organisms to retain the violet dye. The sodium bicarbonate probably affects the Gram reaction by increasing the penetration and concentration of the dye within the cell rather than by any action on the cell-wall or the molecules of the dye-iodine precipitate.—Victor Burke, *Jour. A. M. A.*, 77, 1020 (1921).



Culture Medium and Agglutination of Meningococcus.—The authors state that individual strains of meningococci when grown on nut nasagar medium become more agglutinable than when they are grown on legumen agar, with or without the addition of blood. The observation may be a possible explanation of some of the "inagglutinable" strains of various bacteria. The agglutinogenic substance in meningococci shows also a relation to the content of nutrient mediums. It is more active in coccal emulsions prepared from nut nasagar

medium than those obtained from legumen medium. This may have a bearing on the production of antiserums. Emulsions of meningococci in physiologic solution of sodium chlorid made with freshly distilled water heated to 65 C. for twenty minutes, standardized numerically, and then preserved with 0.5 per cent phenol have remained unchanged as to numbers, and sterile for five years. At the end of this period, the agglutinability and agglutinogenic capacity persist practically unaltered.—I. W. Hall and G. E. Tilsley, *Lancet* (London), 201, 494 (1921); *Jour. A. M. A.*, 77, 1134 (1921).



Blood Test in Diabetes Mellitus.—Twenty c.mm. blood are mixed with 1 c.c. of a 1:6,000 aqueous solution of methylene blue and 40 c.mm. liquor potassae. The mixture has a deep, definite blue or bluish green color. The tube containing the mixture is placed in a water bath, and the water kept boiling for four minutes. If the blood sugar is decidedly increased, the blue color of the mixture will change to brownish yellow (almost the color of normal urine). When the blood sugar is not increased the mixture tube retains its blue or bluish green color.—R. T. Williamson, *Practitioner* (London), 107, 169 (1921); *Jour. A. M. A.*, 77, 1135 (1921).



Bilirubin Colorimeter.—The author uses 0.05 parts of potassium bichromate in 500 parts distilled water with 2 drops of sulphuric acid. The bilirubin content of the blood is shown by the number of 0.5 c.c. of physiologic sodium chlorid solution that has to be added to the plasma to bring the tint to correspond. He expatiates on the simplicity and the importance of the test in revealing the insidious passage of bile into the blood.—E. Meulengracht, *Deutsch. Archiv f. klin. Med.*, 137, 38 (1921); *Jour. A. M. A.*, 77, 1141 (1921).

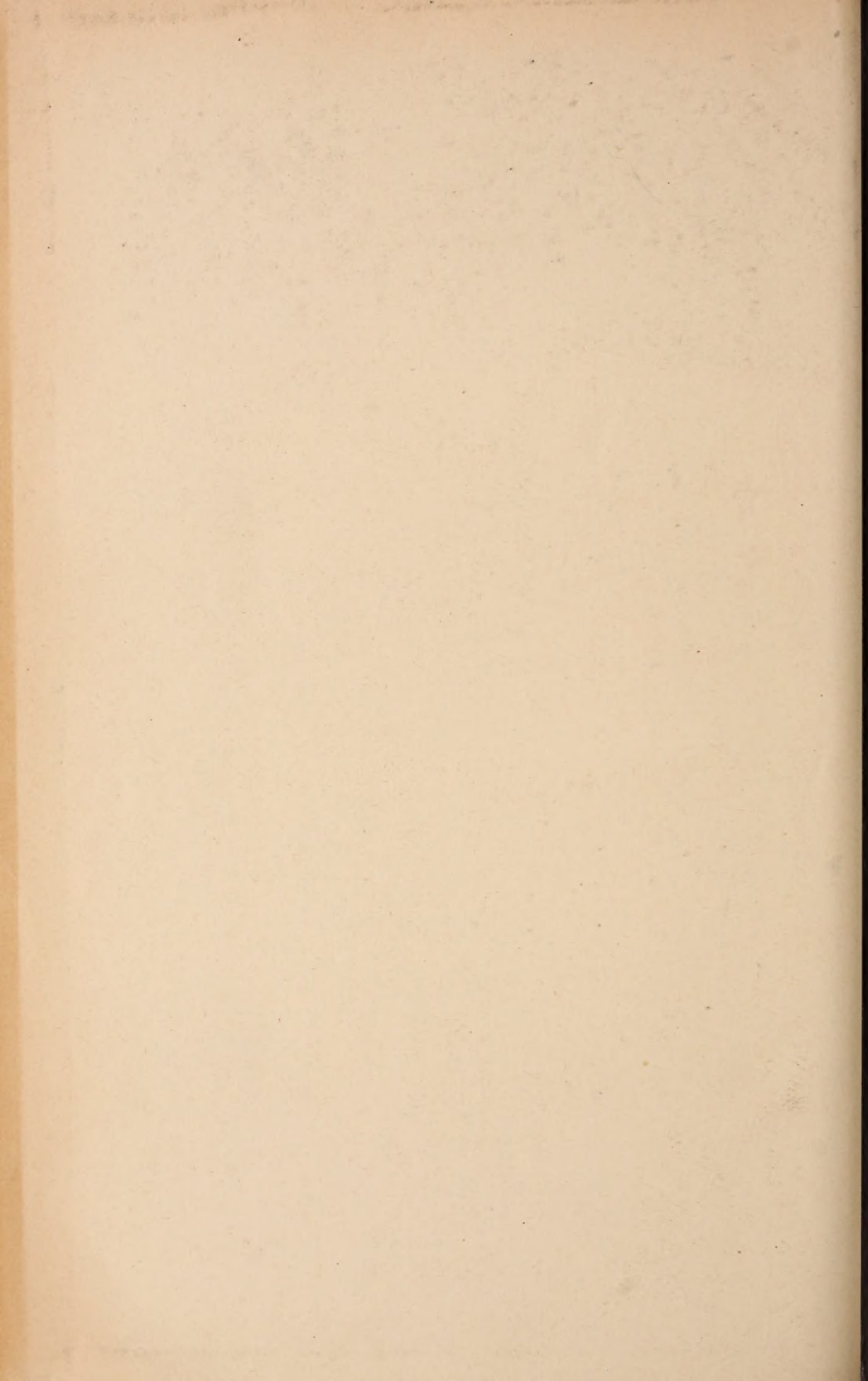


Observations on Bacillus Botulinus Infection of Canned Spinach.—*Bacillus botulinus*, type A, is able to multiply and to produce its characteristic toxin in canned spinach, although the development of the organism in this food product was found to be somewhat irregular. In some instances there was evidence of a rapid multiplication, while in others there was apparently neither

growth nor toxin formation. In all of the latter cases, however, the organism was found to be viable. A temperature of 37 C., as contrasted with room temperature, accelerated the development to a certain extent. When multiplication had progressed readily, 0.5 c.c. of the spinach juice per os proved sufficient to kill guinea-pigs, usually within eighteen hours. The growth of *B. botulinus* in canned spinach is accompanied by the evolution of gas as well as by the elaboration of the specific toxin. In only one instance had toxin formation advanced to such a stage as to produce a fatal result, while at the same time gas production either had not occurred or was insufficient to cause bulging of the can. Of 174 samples of canned spinach taken from suspected lot, *B. botulinus* or its toxin was found in six. In every case, the organism was of the A type. These six toxic cans were all "hard swells," and when opened, the odor was distinctly offensive. The destruction of foodstuffs deemed to be abnormal, either by appearance of the containers or by the odor, should prevent the greater number of the outbreaks of botulism. From the public health aspect of the problem, the last point is of especial importance.—S. A. Koser, R. B. Edmondson and L. T. Giltrair, *Jour. A. M. A.*, 11, 1250 (1921).



Determination of Sugar in Urine.—In this method the urine is diluted so that the specific gravity does not exceed 1.030. Fifteen c.c. is treated with about 1 gm. bone-black (smaller quantities of both may be used if desired). The mixture is shaken vigorously occasionally for from five to ten minutes, and then filtered through a small dry filter into a dry flask or beaker. From 1 to 2 c.c. of the urine filtrate is measured into a test-tube which is graduated at 25 c.c., and if the volume used was less than 3 c.c. enough water is added to make the volume exactly 3 c.c. Then exactly 1 c.c. of 0.6 per cent picric acid solution (best prepared from dry picric acid) and 0.5 c.c. of 5 per cent sodium hydroxid solution are added. Just before the tube is ready to be placed in boiling water 5 drops of 50 per cent acetone (this should be prepared fresh every day or two by diluting some pure acetone with an equal volume of water) is added, care being taken that the drops fall into the



COPY 2

COPY 3

COPY 4

